HNOLOGY DEPT.

Gas Journal

Vol. 267. 103rd Year. LONDON, JULY 18, 1951. No. 4598. Price 1/-

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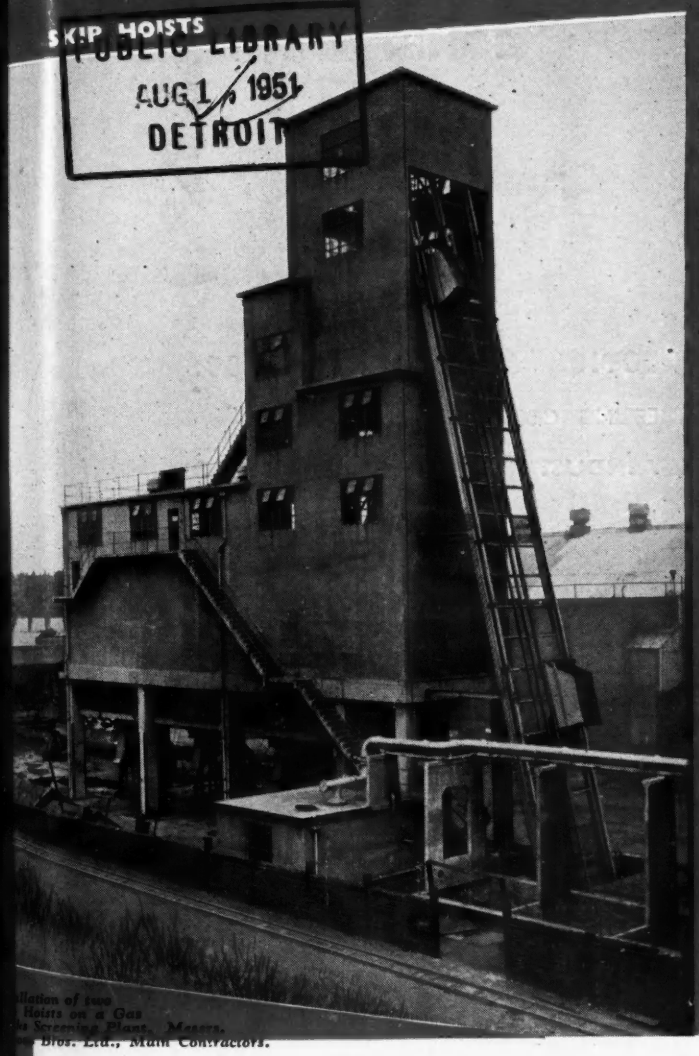
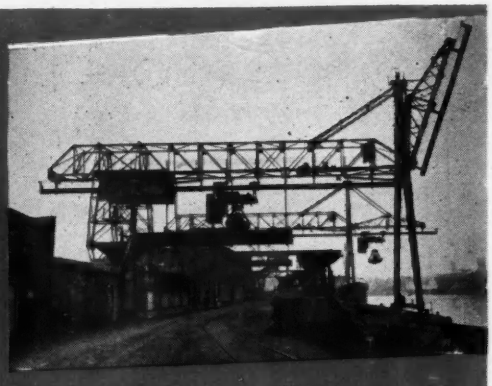


SKIP HOISTS

...llation of two ... Hoists on a Gas ...s Screening Plant. Messrs. ... Bros. Ltd., Main Contractors.



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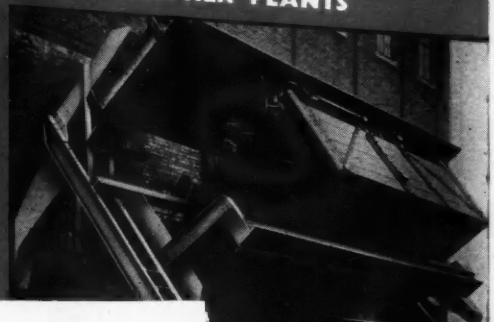

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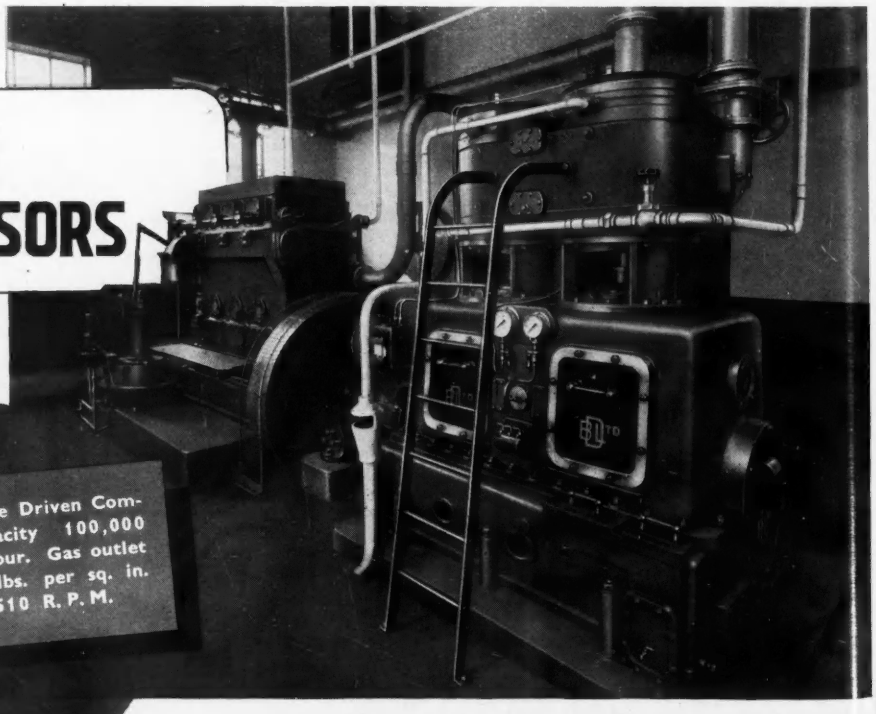
GAS COMPRESSORS



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Spersom
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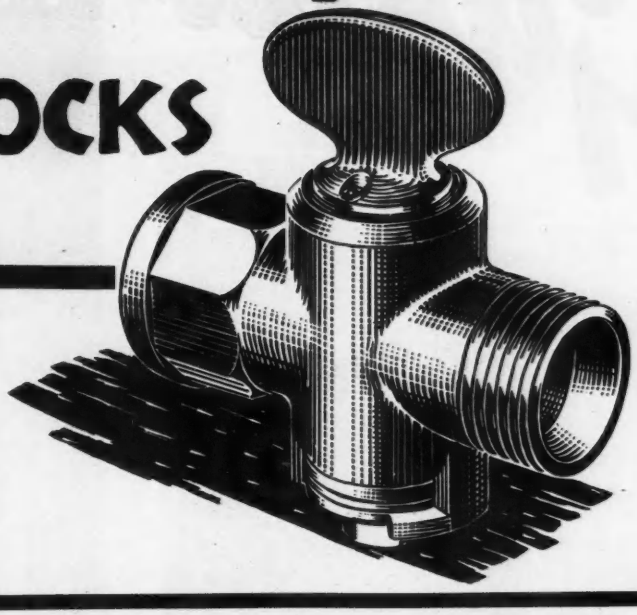
MAIN COCKS



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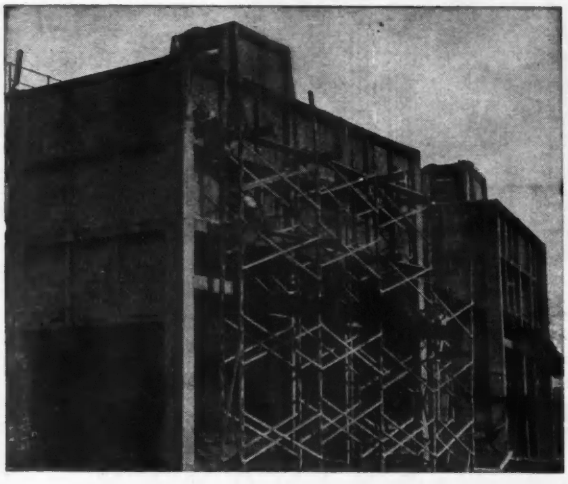

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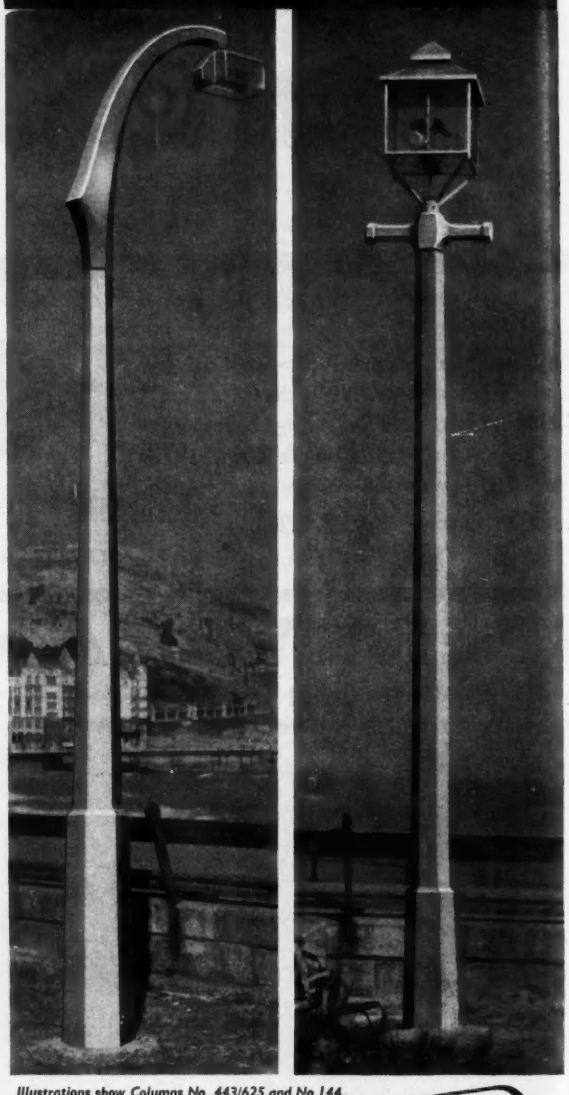

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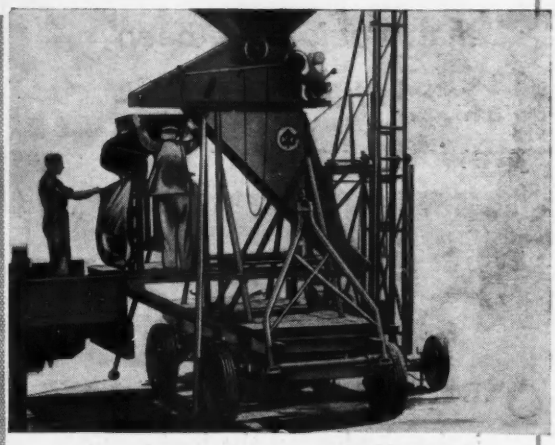

(Above) **DE-BREEZING, WEIGHING AND BAGGING**
The output ranges from 20 to 25 tons of clean coke, bagged and weighed within the hour. Equipment includes ACE Mobile Hoist, fitted with automatic tipping skip and arranged for remote control.

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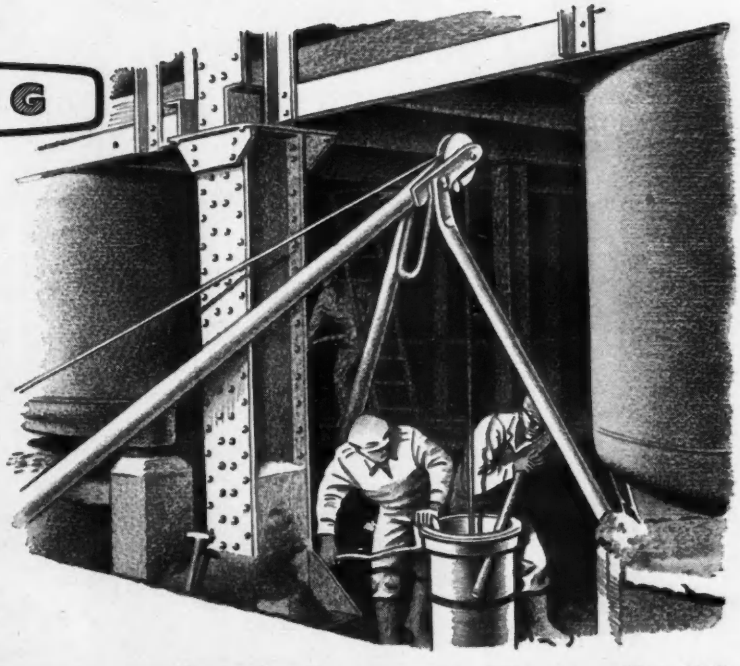

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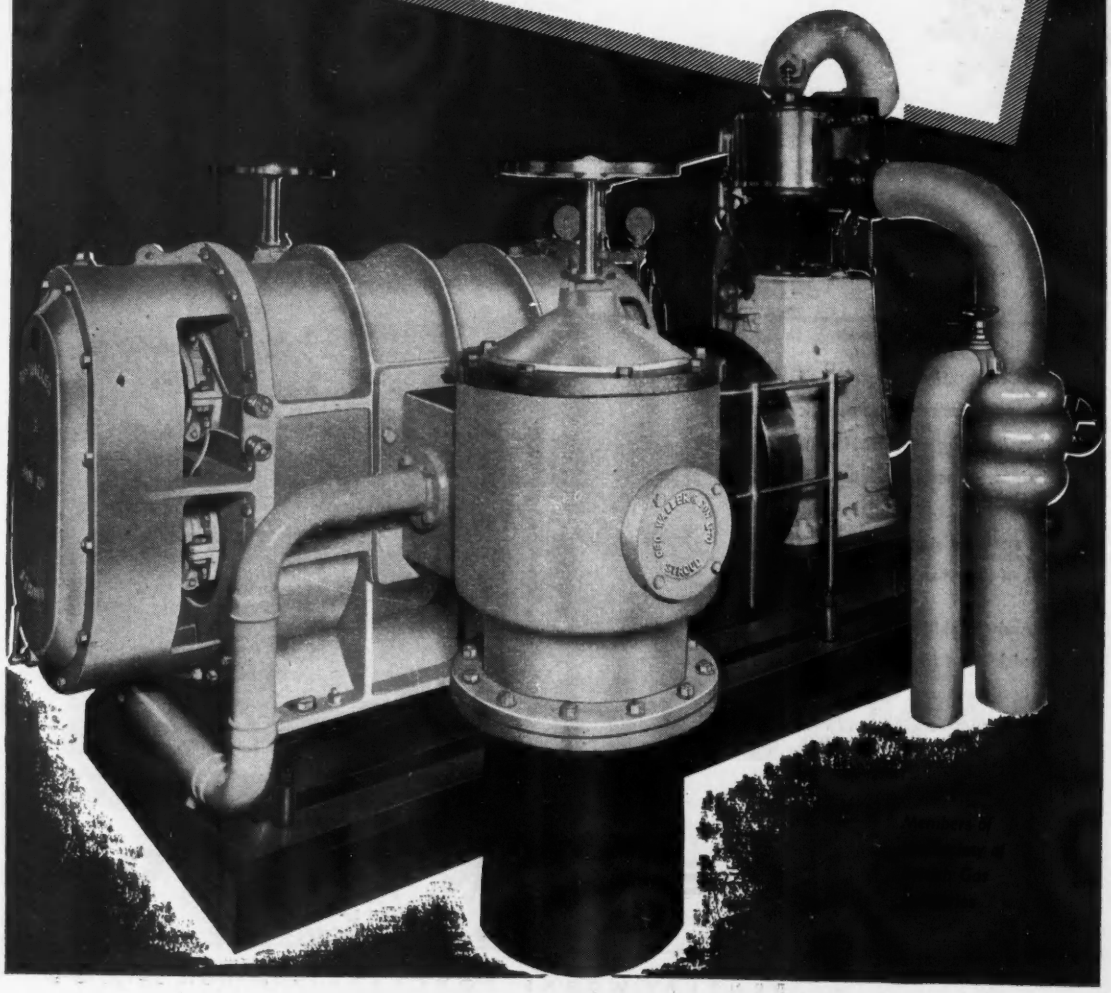

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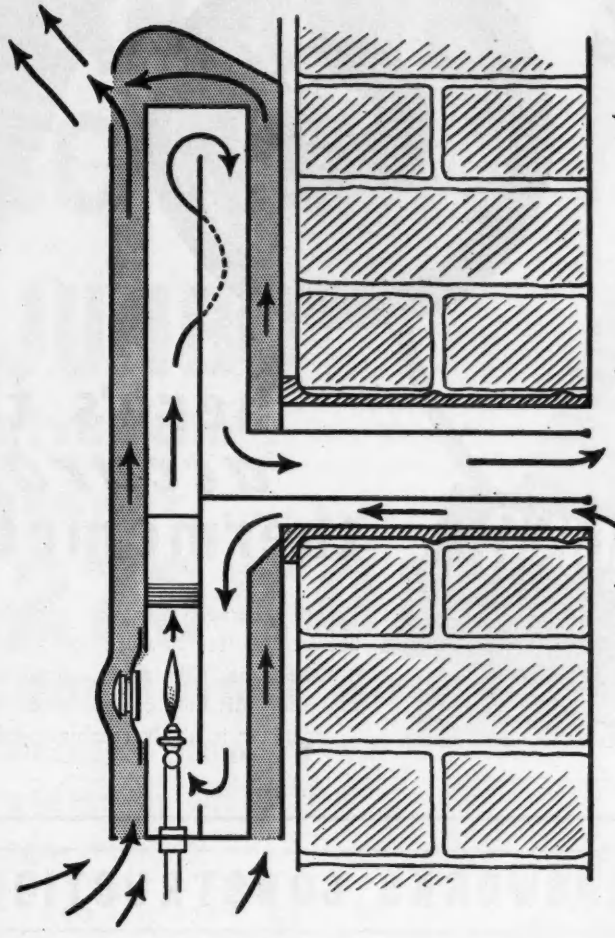

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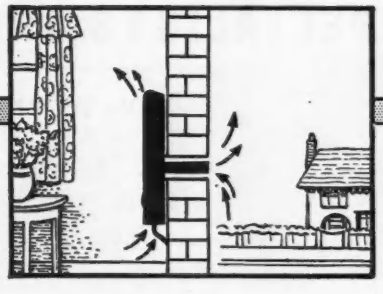

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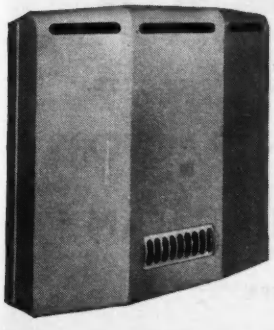

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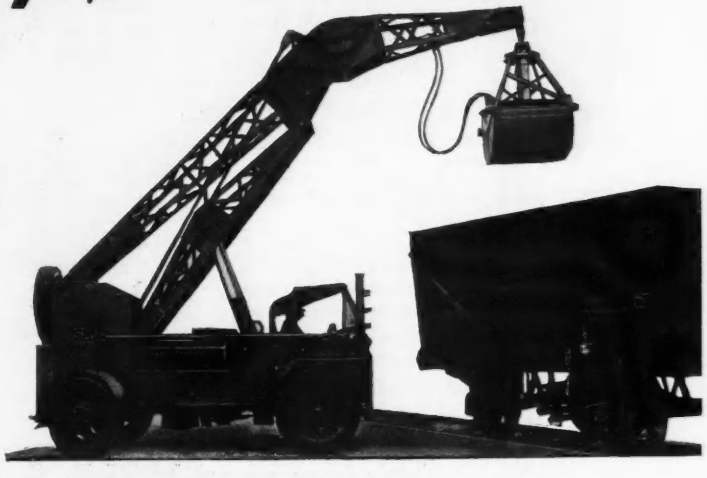

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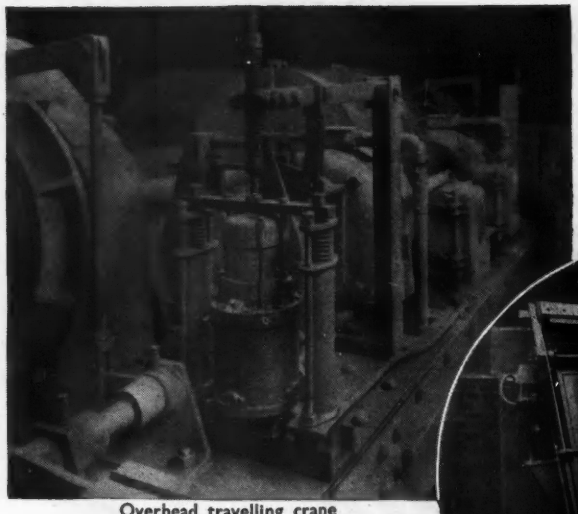

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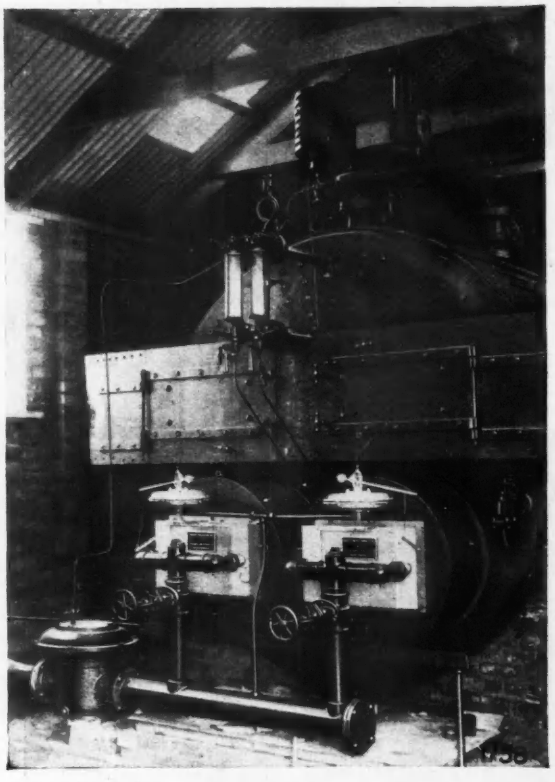

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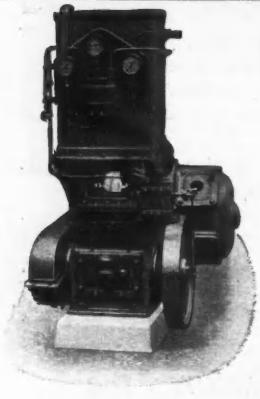

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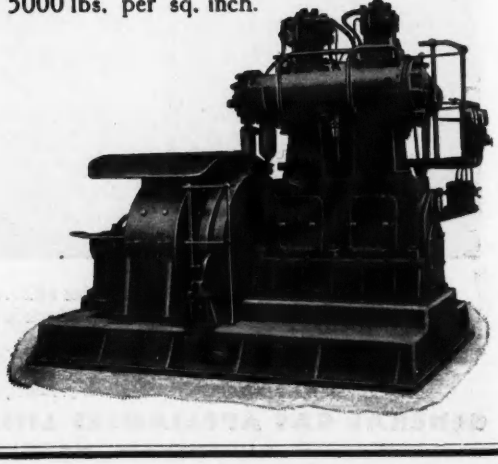
The compressor shown above has a capacity of 25 cu. ft. of free hydrogen per minute compressed to 3000 lbs./sq. inch. The illustration on the right shows a four-stage compressor with a delivered capacity of 200 cu. ft. of free town's gas per minute compressed to 5000 lbs. per sq. inch.



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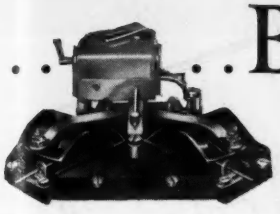
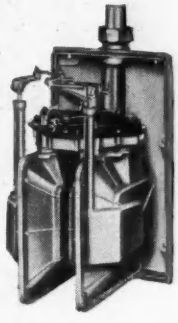
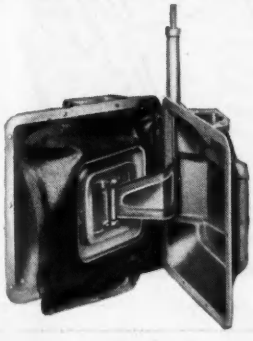


Valves of graphite-impregnated plastic, with stainless steel bearings and linkages of Monel

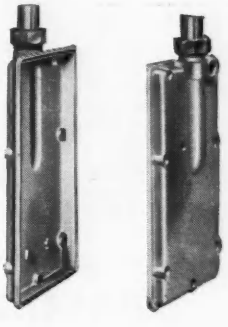
.....one good point...



Constant volume diaphragm chambers — accuracy at all rates of flow.



..leads to another....



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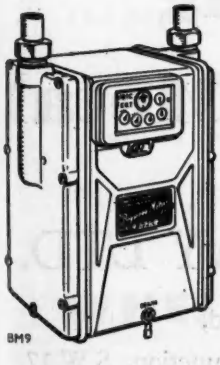

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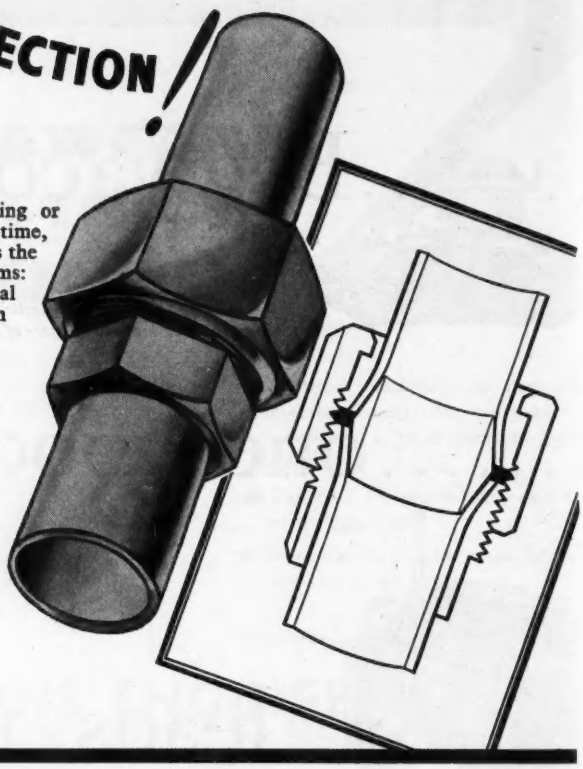

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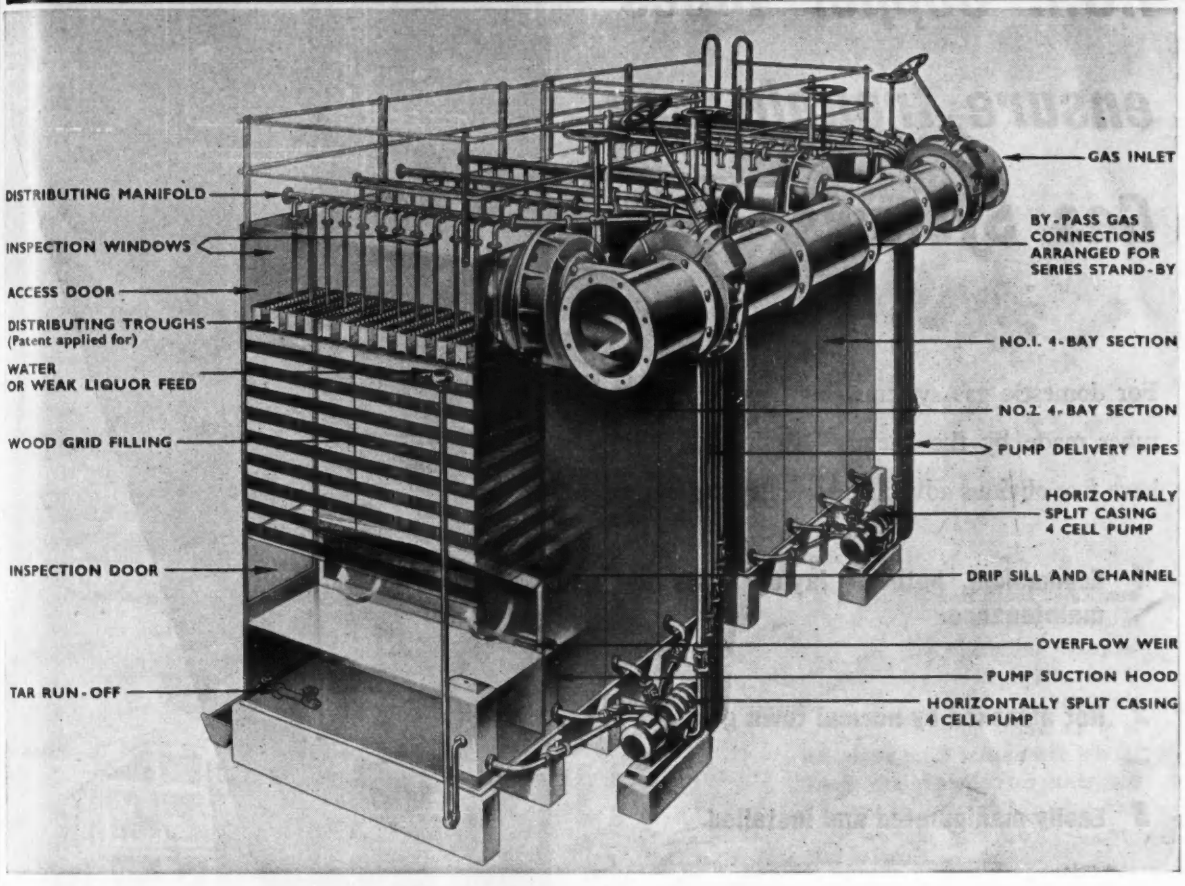

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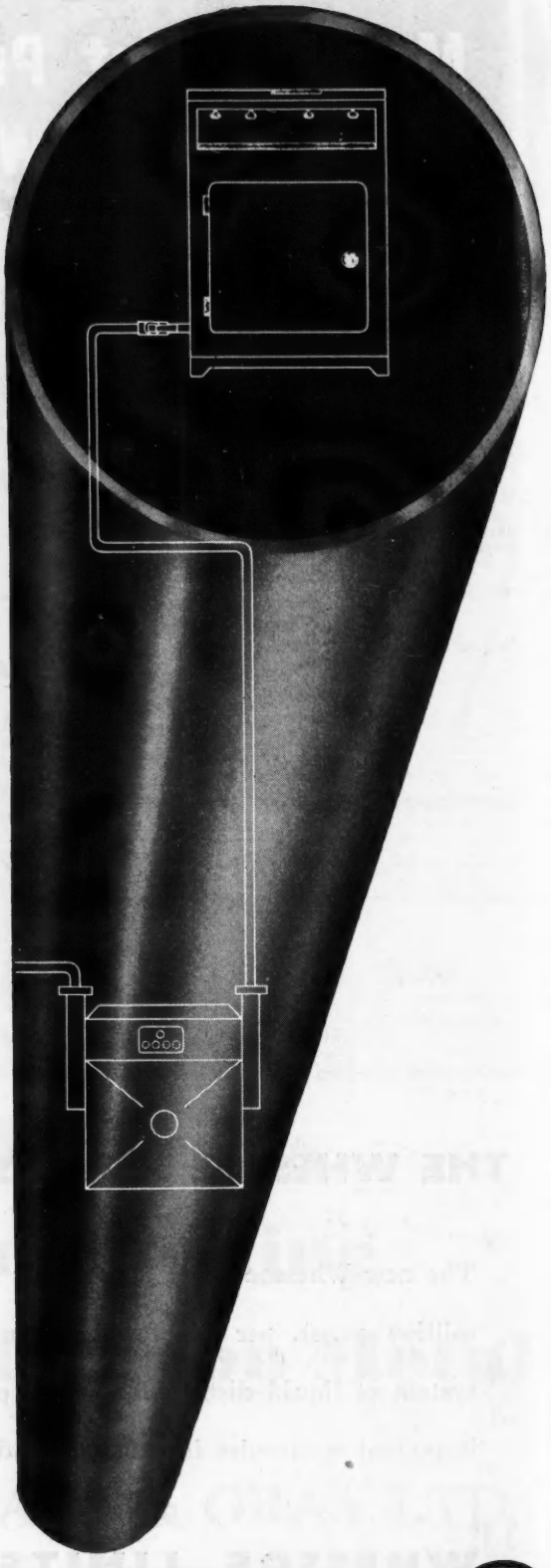

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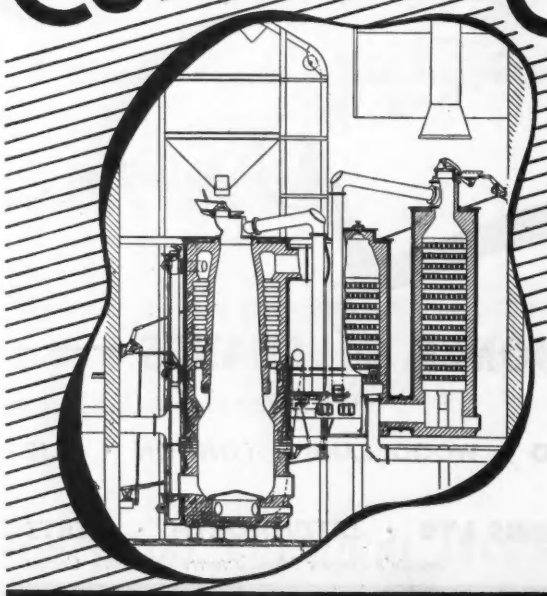

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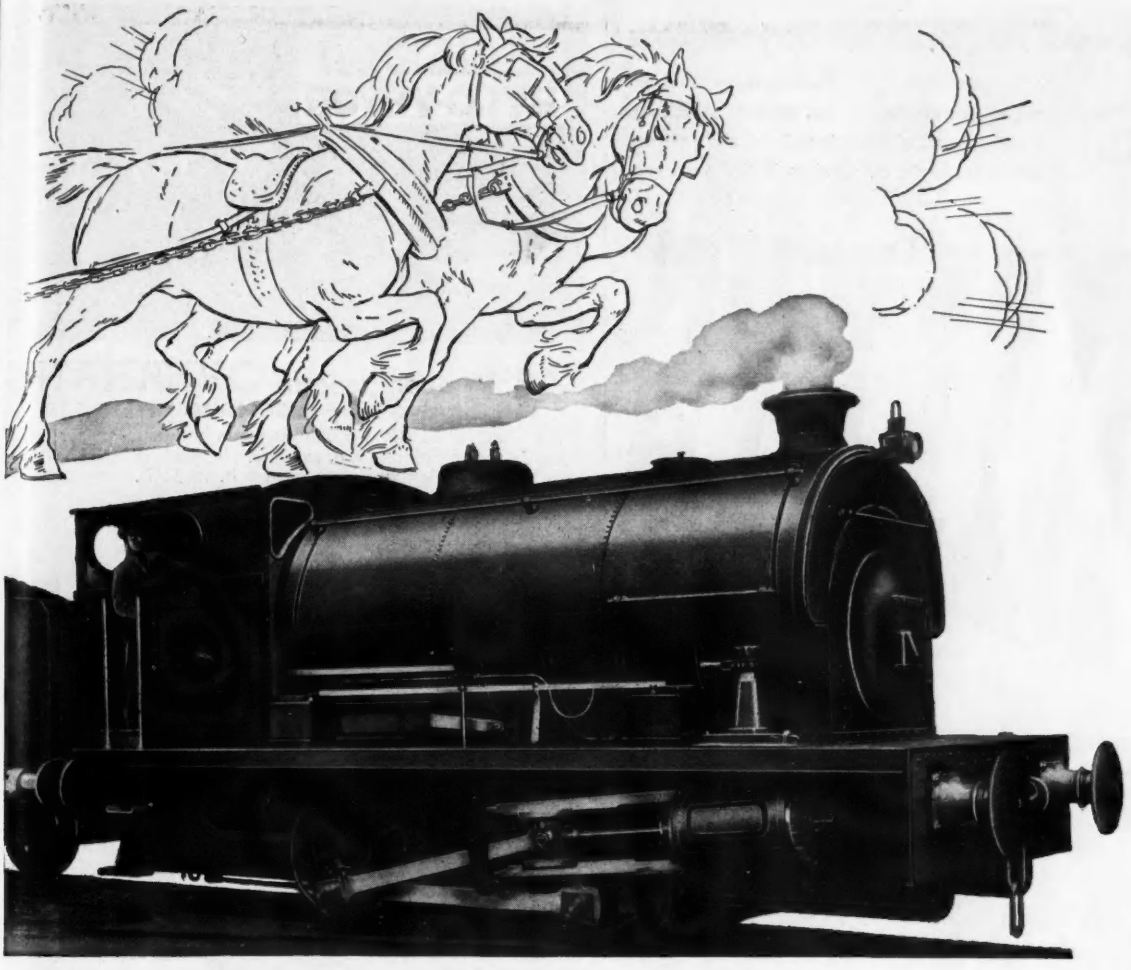

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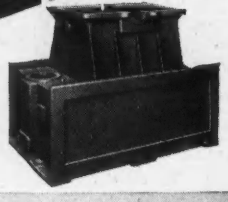

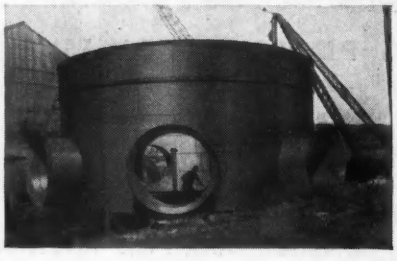

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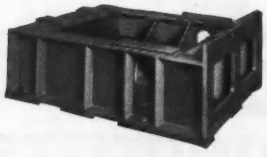

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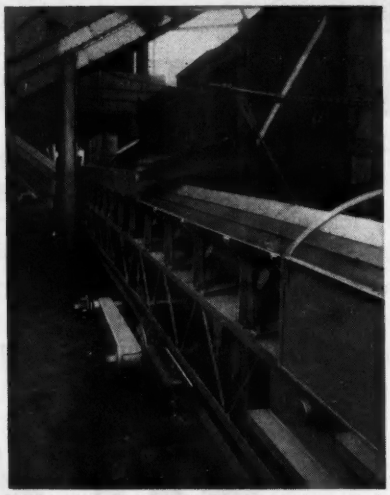

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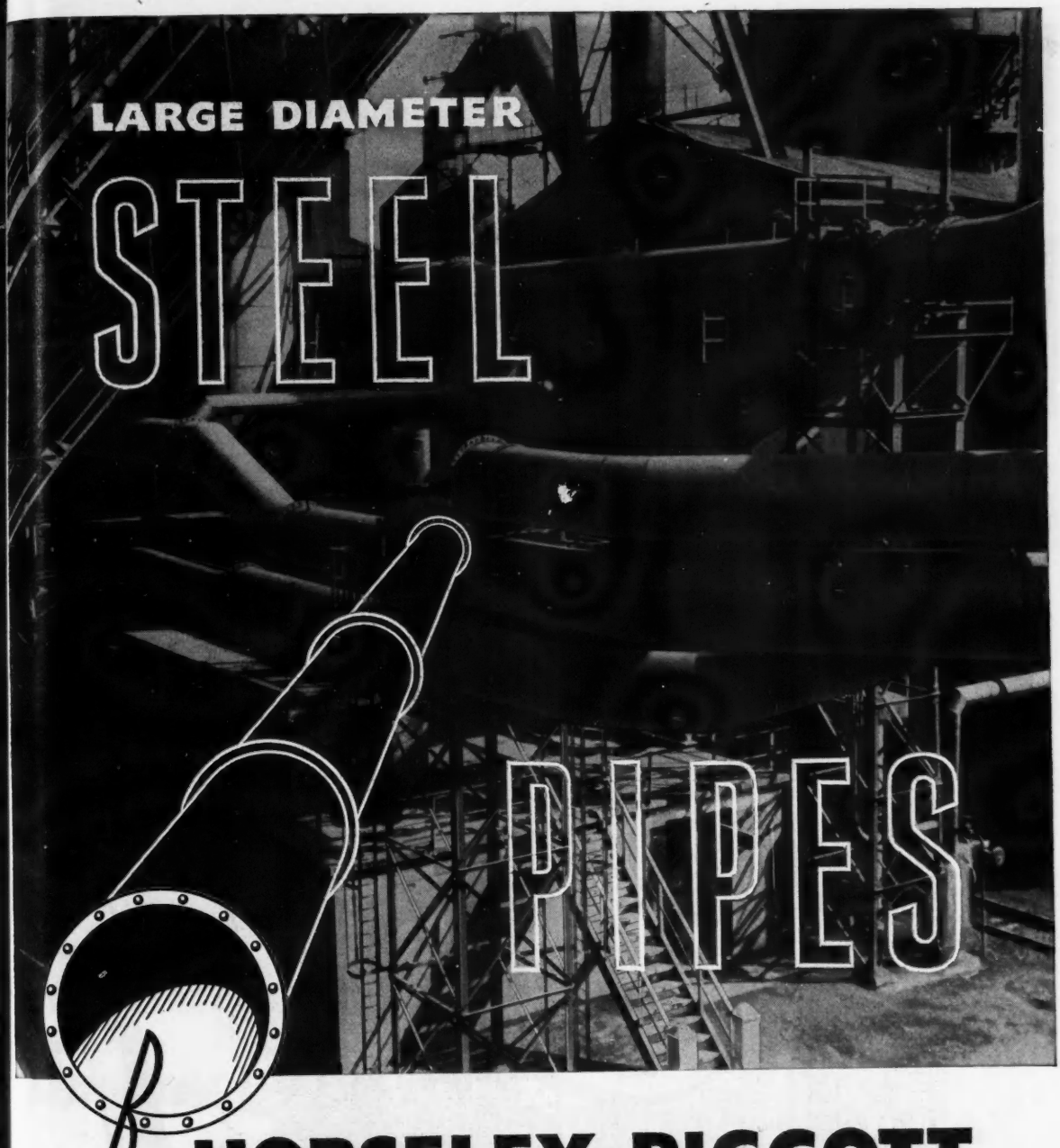

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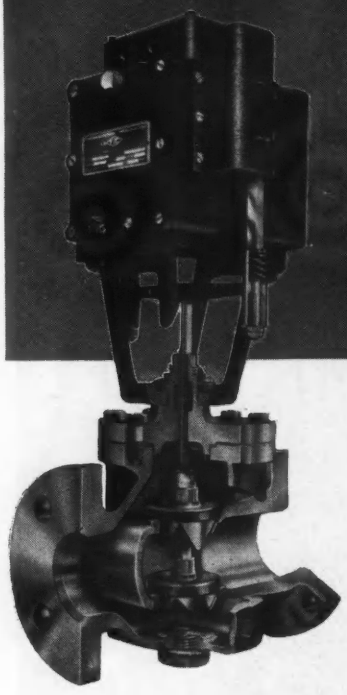

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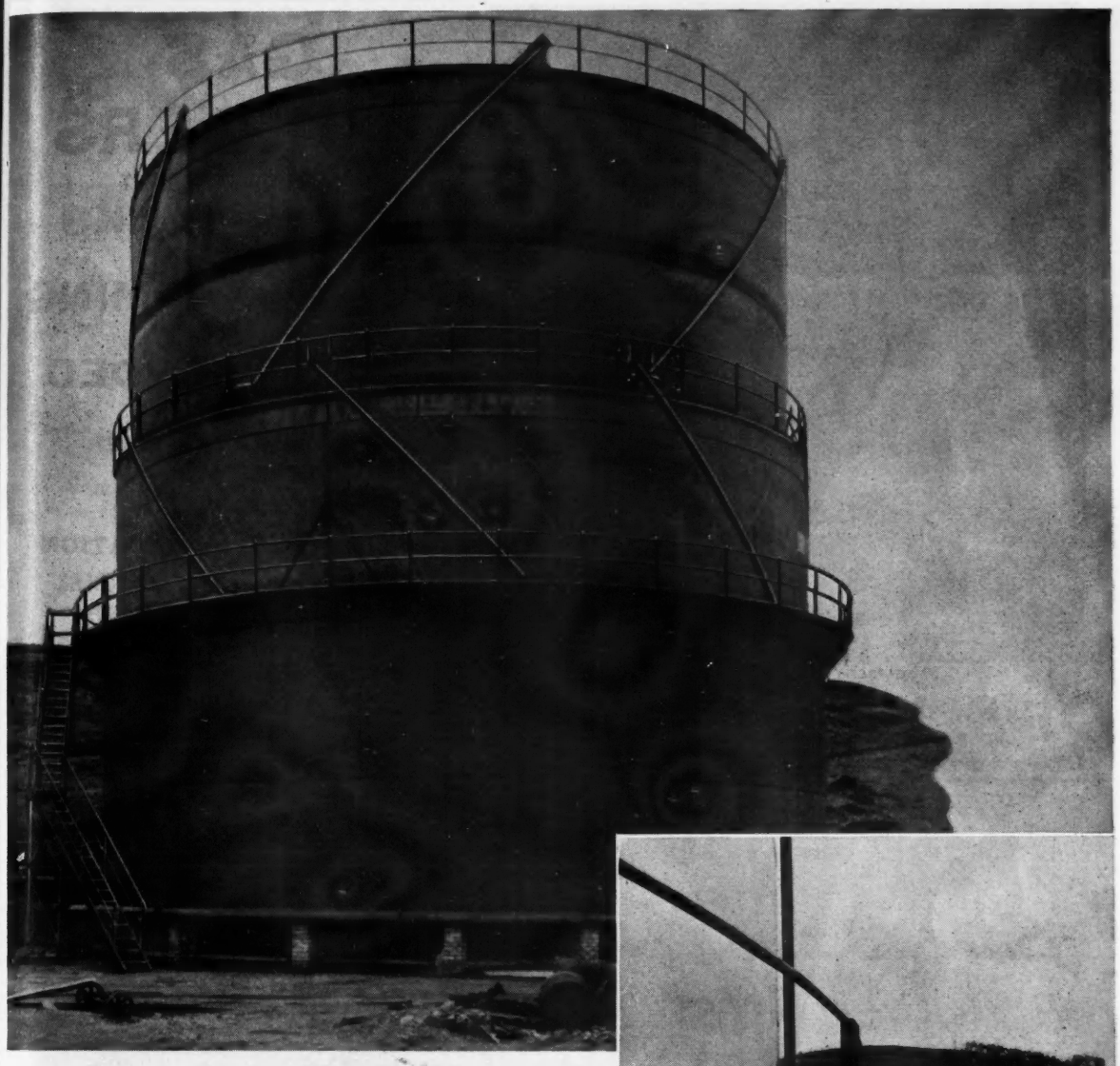

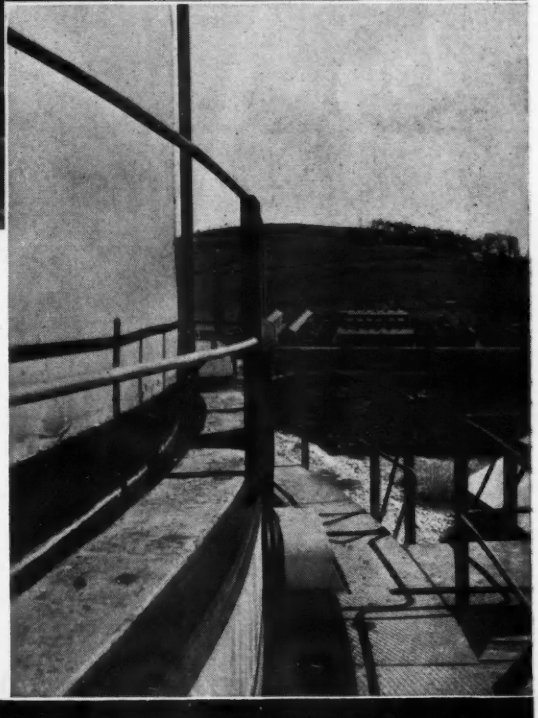

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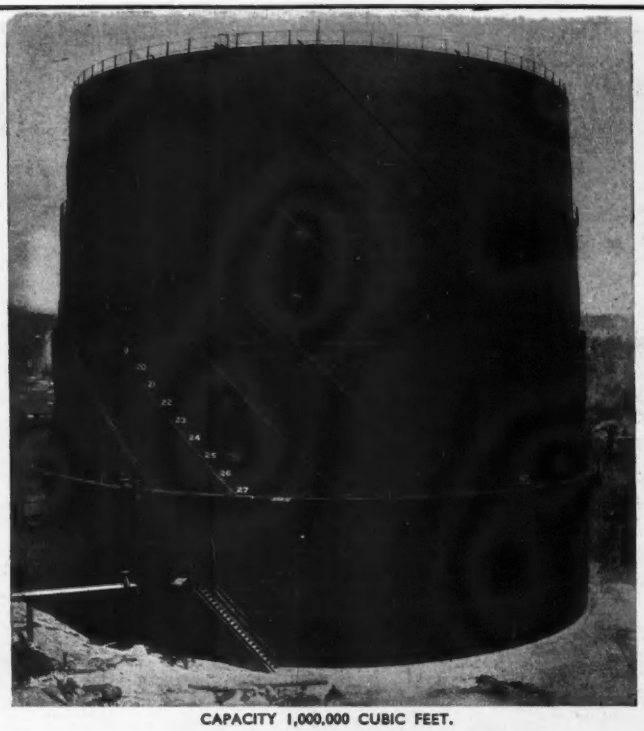

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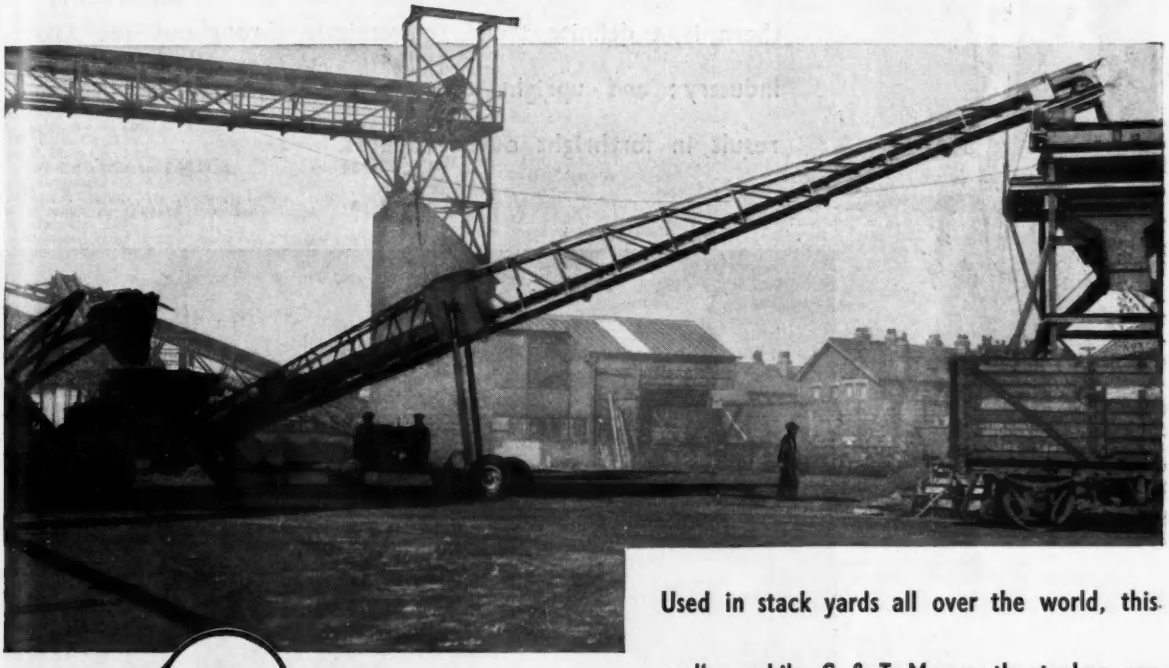

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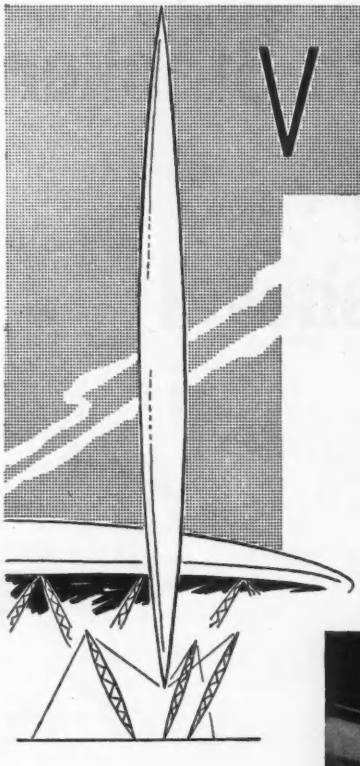

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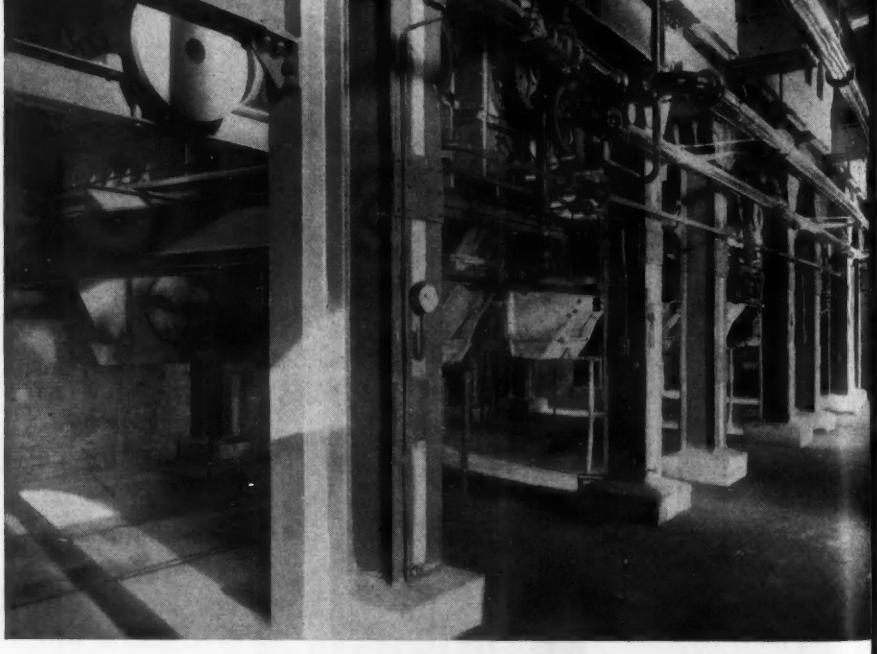

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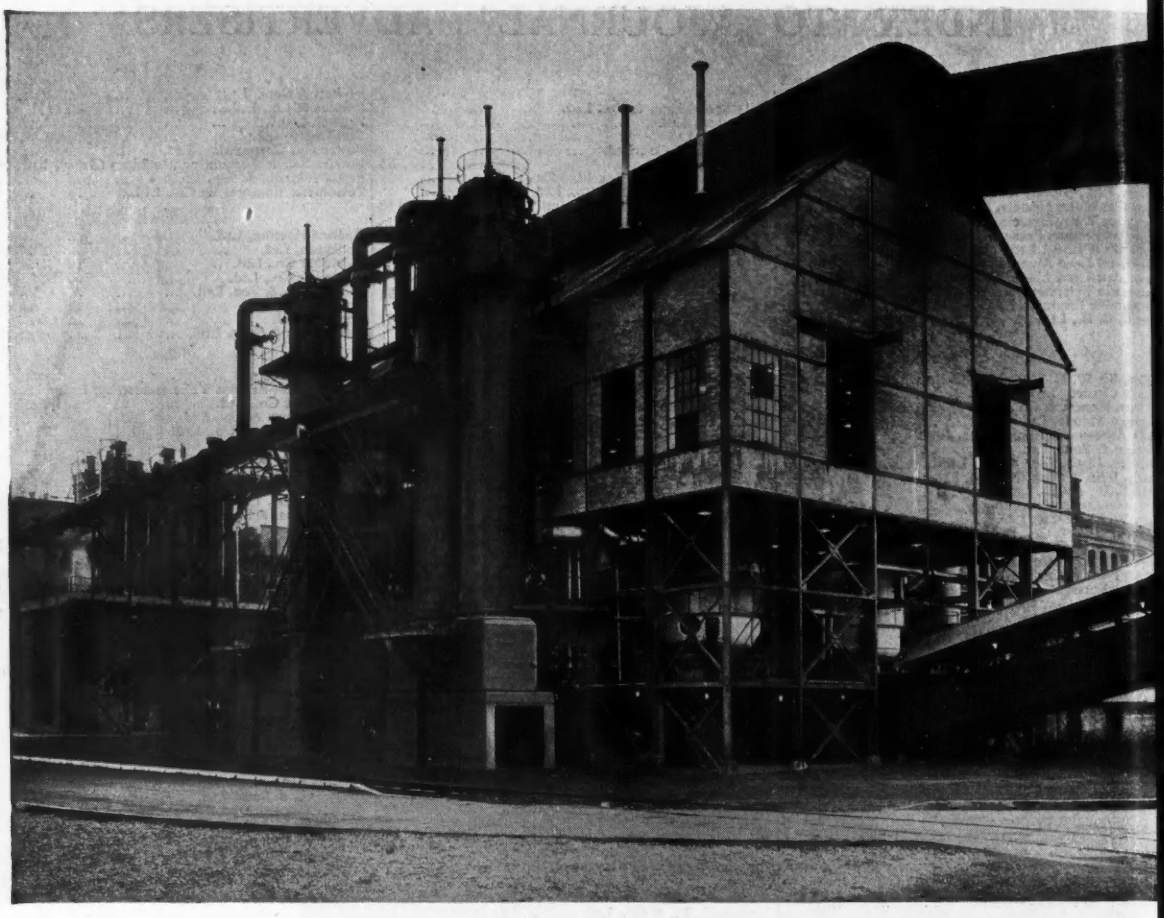

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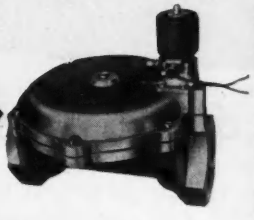

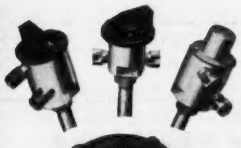

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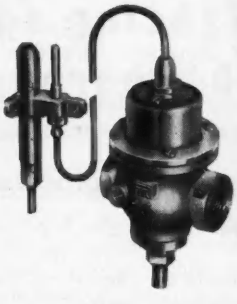

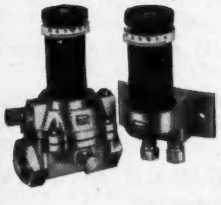

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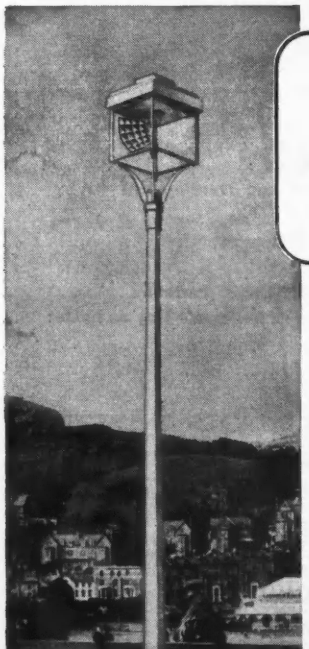

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GAS JOURNAL

VOL. 267. NO. 4598 103RD YEAR JULY 18, 1951

A CONSUMER'S DUTY

WHEN a gas board knows, or ought to know, that a service pipe is in a bad condition it is its duty to take steps to remove the risks of escape, even to the extent of entering premises or cutting off the supply, but in the absence of notice there is no duty on a board to make periodic visits to see whether hidden pipes are in a satisfactory condition. Such, briefly, is the purport of an important judgment delivered by the Lord Chief Justice and reported in later pages, in a claim for damages by an 'invitee' at a Harringay refreshment bar who was one of several people injured in an explosion one Sunday night last year. Apparatus on the premises was fed by two service pipes—an old and a new—and a complaint of insufficient supply on the old service had been dealt with by means of a suction plant, to clear any deposit in the pipe, sent round by the Eastern Gas Board. In joining the Board with the proprietor as defendant the plaintiff submitted that the Board's officers should have known the condition of the pipe.

In connection with some structural alterations the proprietor enlisted the services of a brass turner, inexperienced in handling 'live' gas pipes, to introduce a bend in the piping system. Some escape of gas was inevitable during the actual job, but apart from that, probably as the result of disturbing clay or earth which had sealed an old-standing crack, a considerable escape of gas was allowed to continue throughout the rest of the day—a matter of eight hours—until the explosion occurred.

Lord Goddard came to the conclusion that there was nothing in the appearance of the pipe when inspected by the Board's inspector to lead him to believe that it was defective or dangerous. He could not say that the Board was liable, and held that the explosion must be attributed to the 'almost crazy conduct' of the proprietor and the brass turner in allowing the escape to continue without doing something about it. They could have communicated with the Board, who had emergency squads always available and could have put the matter right in a few minutes. The proprietor was ordered to pay £150 damages and costs, and also to pay the costs of the Board.

FITTING CLIMAX

THE moment for which the whole industry has been waiting with pleasurable anticipation for many weeks has come and gone; and no more fitting climax could have been wished for the Festival Fare National Cookery Contest than that the success of the final should have been crowned by the gracious presence of H.R.H. Princess Elizabeth to present the prizes. This greatest co-ordinated publicity effort probably ever staged by the gas industry has meant an enormous amount of hard work at all levels—by no means least of which was the installation in the ballroom of the Park Lane Hotel of twelve complete kitchens with all the requisite gas and water services, wastes, and special lighting.

The arrangements for the final, including catering for upwards of 800 guests, were in every way admirable, and the Women's Gas Federation and everyone else concerned are deserving of the warmest praise—not forgetting the many expert judges who in all stages of the competition 'whittled down' the original 40,000 entrants to the final winners. And to the winners themselves, and indeed to every competitor from the first round onwards, the industry must say 'thank you'—for without their interest, and courage, the whole thing would have fallen flat instead of attracting the enormous amount of attention it has. We say 'courage' because it is no small ordeal to cook a meal under the critical eyes of expert judges and hundreds of onlookers and in the glaring spotlight of publicity. It is interesting to note that the eventual honours were shared by competitors from widely separated parts of the country.

First prize went to the Midlands, where Mrs. Hilda Upton, of Loughborough, Leicestershire, local councillor and mother of seven children, became 'Gas Cook No. 1.' Second prize went to Hampshire, in the south; third to Durham, in the north; while fourth was awarded to a competitor far beyond the border in Aberdeenshire.

Her Royal Highness showed the keenest interest in the kitchen units and had a word for each of the twelve finalists. With her on the platform were Dame Vera Laughton Mathews, Chairman of the Festival Fare Committee and adviser to the Gas Council on women's affairs, and Miss Kathleen Halpin, president of the Women's Gas Federation, the Rt. Hon Philip Noel-Baker, Minister of Fuel and Power, Sir Edgar Sylvester, Chairman of the Gas Council, and many area board chairmen. On a later page of this issue we have portrayed pictorially an impression of this historic occasion which, as part of our Festival Year celebrations, has done so much to pay well-merited recognition to the ordinary, hard-working British housewife to whose imperturbable efficiency we all owe so much in the difficult times in which we are living. We offer to all concerned the industry's congratulations on the smoothness with which the whole competition has been planned and organised from start to finish.

THE ENGINEER AS A MANAGER

IN stating that managers do not become engineers but some engineers become managers, the accent must be upon the word 'some.' Many engineers, competent and even brilliant in their field, lack the qualities essential in a managerial post. Since the attainment of such a post is the ambition of most young engineers, the subject is worthy of examination, and we therefore draw readers' attention to a paper by J. M. Juran on 'The Engineer as a Manager.' Originally presented to the American Society of Mechanical Engineers, the paper has since been read before two branches of the Engineers' Guild in this country.

The skill of the manager, suggests Mr. Juran, is very different from the mechanical skills practised in the factory, work, or office. Essentially the role of the manager, is 'to get things done through other people,' and to carry out this role the manager requires skills which are as yet not well understood. While the distinguishing feature of engineering is the use of the forces of nature for the benefit of man, that of management is the use of the forces in people, also for the benefit of man. And just as the engineer has evolved various branches of engineering knowledge—thermodynamics, machine design, and so on—the manager has evolved various branches of management knowledge: organisation, controls, incentives, and the rest.

Now engineering provides no training on the forces in human beings, let alone how to use these forces, and it must therefore be concluded that the study of engineering does not qualify one to become a manager. What therefore should one study? According to the author, there is no such course; but while industry has no scientific method of identifying good managers, it does know that good managers must possess certain special qualities such as balance, maturity, and leadership, and that the acquisition of these qualities requires much time and experience, as well as training. For the most part potential managers must learn from their elders, perpetuating their good or bad practices, but does this mean that engineering is to continue doing business 'as usual' leaving engineers to transfer into managerial posts as best they can? On this point, Mr. Juran is outspoken. 'If the engineering profession concluded this,' he says, 'it would be a disservice to the aspirations of a majority of its members. The engineering profession should rather adopt a course of action which would aid engineers to qualify themselves more readily for managerial posts.' Which is all very well, but how is it to be done?

Mr. Juran goes at least part of the way towards finding a solution. In the first place, he believes that engineering training can be most helpful since 'it supplies an important methodology, that of engineering methods of decision based on knowledge derived from reproducible experiments.' But although the engineer is equipped with a methodology which is helpful in the solution of managerial problems, he has no place to go except in engineering because his knowledge of the living sciences is not adequate for the managerial task.

Today the engineer who seeks to prepare himself for a managerial post must, in the author's words, 'be prepared to study psychology, sociology, and others of the living sciences to learn more of man as an individual and men as a group. He must study various tools of management—organisation, controls, and incentives—to learn how to utilise these human forces; he must study economics, law, and so on to learn what is for the benefit of man. In particular the manager must see in proper perspective the relationship of all the living sciences to each other. Only through such perspective can he perform the trusteeship job which is his duty if he is to emerge as a member of his profession.' And later he says this: 'The risk today is not that management will become top-heavy with engineers. On the contrary, the risk is that engineering training with its great emphasis on the natural sciences will develop increasingly a trained incapacity on the part of engineers to advance into managerial posts. Years of commanding kilowatts and decibels and of securing invariable compliance can be sorry training for a managerial post where command means so little and where leadership means so much.'

Mr. Juran's paper is general in its suggestions because, since it is aimed at the whole engineering industry, it is general in its applications. As far as the gas industry is concerned, the paper may be said to fit in places. In the past most managers have been engineers; the influx of managers from the sales side or from other professions has been fractional. And few, we suspect, of these engineers turned managers have bloated themselves with psychology and the rest. And they have not been any the worse for that, since the efficient engineer on a gasworks must have at least a modicum of know-how when dealing with the men in

his employ. On the whole, managers in the gas industry learned the hard way. If they were good engineers they had a chance to develop latent commercial faculties and become engineers and managers; and if the undertaking was a large one, their responsibilities in the engineering field were handed to a deputy, and the bulk of their time became devoted to executive tasks—to management in fact.

Where the paper does apply to our industry is in the reference to a growing tendency to develop a trained incapacity on the part of engineers to advance into managerial posts. This is a nationalised industry, and management has become increasingly centred at headquarters governing considerable areas and numerous works. For this reason there is a tendency for engineers to become 'specialists' in much the same way that chemists have, and for management to be placed in the hands of those possessing at least some of the wordy qualifications described by Mr. Juran, but lacking an engineering background. To some extent this may be inevitable, but to what extent is it desirable? For our part we should be sorry to see the engineer deprived of his opportunity to rise to a managerial post. Our industry has been built by engineers, and there is no reason why it should not continue to flourish under their direction—provided that the engineer is given the chance to develop those aspects of his personality and mentality which fit him for management. Although some universities and colleges have taken a long stride towards broader development of engineers by adopting the so-called humanities courses, the serious limitation of college training in management is the lack of an adequate laboratory. In the study of management the laboratory is industry itself, and to utilise this laboratory suggests that industry must participate heavily in the job of training. As Mr. Juran says: 'The fact that industry has so nearly a monopoly on the management laboratory puts a special duty on industry to identify prospective managers and to help teach them how to manage, preferably in close collaboration with the colleges.'

AROUND THE SHOWS

BELIEVING as we do in the bright future for gas in the countryside—given proper leadership and encouragement from the top—we make no apology for devoting further space to reviews of the gas displays at agricultural shows. During the past couple of weeks we have paid special visits to two more big shows, one of which, the Royal, is, of course, the greatest of all agricultural events, while the other, at Maidstone, was typical of the bigger county shows. The Royal we deal with on later pages today; the Kent Show we shall describe next week.

In no other place in the world can be seen gathered together in one spot so large a collection of Britain's finest farm stock than at the Royal Show. Agriculturalists and the general public from all parts of the country and abroad congregate at the Royal in their tens of thousands. It was therefore encouraging to find not only a noteworthy gas display at Cambridge, but one which had emerged from its poor site at the previous show to one of the finest positions in the whole vast 150-acre showground, just within the main entrance. And the Gas Council, in co-operation with the Eastern Gas Board, took full advantage of this splendid vantage point to stage an exhibit which redounded to the credit of the industry.

It is gratifying to note the growing appreciation of the value of these shows as publicity media for the gas industry, for nowhere else—with the exception perhaps of the Ideal Home Exhibition and the B.I.F.—are such enormous 'gates' recorded as at these agricultural events. There are consequently no better places in which to set forth the service which gas can render, not only to the work of the farm but to the life of the rural community which will more and more comprise our consumers in the future.

In commending the high standard of the industry's displays at these shows, we have thought it right to draw attention to certain ways in which we think the exhibits could be still further improved, for no description is complete without criticism, as the designers of the stands will be the first to admit. Without detracting from the value of the purely domestic exhibits, which must essentially form a part of these displays, we feel that the agricultural interest could be stimulated more by greater attention to the layout of the industrial appliances. For example, while the grass and grain driers are excellently laid out in actual operation, much of the dairy and allied equipment is shown as isolated units unconnected with the operations of which they form a part. We believe that greater weight could be given to these exhibits from the farmer's viewpoint by showing them in the settings in which they normally function. We should like to see a model dairy (such as the electricity industry incorporates in its displays) with all the gas appliances—milking machine, cooler, pasteuriser, steriliser, boiler, bottle washer, etc.—installed in their proper setting to portray the whole sequence from the cow to the consumer's gas refrigerator. In this way the farmer will see gas service in its full perspective.

THE NEW GAS ISSUE

THE issue by the Gas Council of the new £75 mill. British Gas 3½% guaranteed stock issued at 98 was over-subscribed. After going to a discount of ⅛, the price recovered and closed at its opening level of ⅛ discount. Applicants for up to £100,000 received allotment in full and for larger amounts the allotment was about 85%. As we pointed out in our note last week, this is the first approach by the Gas Council for new money to private investors and its terms indicate the limits of Mr. Gaitskell's belief in higher interest rates and the very different conditions which the Treasury must accept when calling for new money from the market than it could statutorily impose upon the owners of gas company stock. The fact that the issue is neither cheap nor dear suggests that in matters of credit policy the Treasury is still maintaining a 'neutral' attitude and is ready to accept the market's judgment on the correct interest rate. The yield of the new gas issue is, in fact, in line with those of existing gilt-edged securities of similar life. Yesterday, in the House of Commons, Sir Waldron Smithers asked the Chancellor if he would now reconsider the position of the original stockholders of gas companies and compensate them for their losses on National Gas 3%, now standing at 84.

Personal

Mr. W. Beswick, Chairman of the Power-Gas Corporation, has retired after 50 years with the Company. He is the last survivor of the original group who started the Power-Gas Corporation.

◆ ◆ ◆

Mr. J. D. Rees, Manager of the Llanwrst (North Wales) gas undertaking for the past three years, has been appointed Distribution Foreman to the Carmarthen undertaking (not Distribution Engineer to the Carmarthen group, as reported last week).

◆ ◆ ◆

Miss Elsie Abbott has been appointed Public Relations Officer to Radiation Ltd. Miss Abbott is a newcomer to the gas industry. For the past 14 years she has been engaged on press and poster advertising, and publicity in connection with matters of interest to women, and during the last six and a half years has been particularly interested in food publicity.

Obituary

Mr. Thomas Ritson, Chief Clerk with the former Hexham Gas Company, has died at Hexham at the age of 66. He was with the Company for 48 years.

◆ ◆ ◆

Mr. L. M. Weldon, who retired from the Hartlepool Gas and Water Company, where he was Distribution Superintendent, in September, 1948, after over 51 years' service, died on July 7, aged 72. He served the Auxiliary Section of the North of England Gas Managers' Association as Hon. Secretary for 16 years, and continued as Hon. Secretary of the Northern Junior Gas Association from its inception in September, 1948, until June, 1950, when failing health compelled him to offer his resignation. Mr. Weldon served for many years on the Northern District Education Committte, was a past Chairman of the Auxiliary Section of the North of England Gas Managers' Association, and also a past Chairman of the Northern Association of Gas Salesmen.

Diary

July 20.—Wales Gas Consultative Council: Meeting, Colwyn Bay.

July 20.—Manchester and District Section, I.G.E.: Chairman's Day. Luncheon, Bolton Town Hall. Visit to Wigan gasworks.

July 26.—North Thames Gas Consultative Council: Caxton Hall, Westminster, 2.30 p.m. (Note.—Not Westminster City Hall on this occasion.)

July 27.—Northern Junior Gas Association : Address by A. Pillans, Works Manager, By-Product Works, Northern Gas Board, followed by a visit to St. Anthony's By-Product Works, Northern Gas Board, Newcastle.

July 31.—Gas Council Industrial Gas Development Committee, Gas Industry House, 9.30 a.m.

Aug. 30-Sept. 13.—Engineering, Marine, and Welding Exhibition, Olympia. (Gas Council exhibit).

Sept. 4.—East Midlands Gas Consultative Council: Victoria Station Hotel, Nottingham, 11.30 a.m.

Sept. 6.—North British Association of Gas Managers: Annual General Meeting, Ayr. (Golf and bowling functions, Sept. 5; Excursion, Sept. 7).

Sept. 10.—West Midlands Gas Consultative Council: Dudley Room, Queen's Hotel, Birmingham, 2.30 p.m.

Sept. 17.—Eastern Gas Consultative Council: Connaught Rooms, Great Queen Street, 2 p.m.

Sept. 18-21.—Association of Public Lighting Engineers: Annual General Meeting and Conference, Brighton.

Sept. 19.—South Western Gas Consultative Council: 34, Bridge Street, Taunton, 11 a.m.

Sept. 19.—Wales and Monmouthshire Section, Institution of Gas Engineers: Autumn Meeting, Llanelly.

Gas Council's Second Research Centre

Dr. F. J. Dent Appointed Director

As foreshadowed by Colonel H. C. Smith, Deputy Chairman of the Gas Council and Chairman of the Gas Research Board, in addressing the East Midlands Gas Board staff conference at Skegness in May, the Gas Council has made arrangements for its second research centre, and has appointed Dr. F. J. Dent (Assistant Director of the Gas Research Board) as its Director. The headquarters of the centre will be at the new and very well equipped laboratories at the Nechells works of the former City of Birmingham Gas Department and will be known as the West Midlands Research Centre of the Gas Council. It will be administered on behalf of the Gas Council by the West Midlands Gas Board, and Dr. Dent's position will be similar to that of Dr. H. Hollings, Director of the North Thames Research Centre, the Gas Council's Research Committee's first enterprise. A third centre may be established at some future date.

The main work of the West Midlands Centre, at any rate for the time being, will be concerned with complete gasification, to which the Gas Council attaches such importance that it is regarded as priority No. 1. Dr. Dent has been engaged on complete gasification research at Poole for some years. That work is not just going to continue, but it is to be considerably accelerated at Birmingham, where there are greater facilities than at Poole. Quite a lot of work will probably continue at Poole for some time on complete gasification and related subjects, but as and when that work is accelerated and developed it will be a matter for consideration whether it should take place at Poole or elsewhere. It will, however, continue to be directed by Dr. Dent, and it is considered that Birmingham offers the best facilities.

Members of the Gas Research Board staff at Poole are to have the option of transferring to the Research Committee of the Gas Council. Transfer does not necessarily mean immediate removal from Poole to Birmingham, but it does entail a readiness to go wherever the Gas Council requires. The new arrangements involve the handing over by the Gas Research Board to the Gas Council of the apparatus and appliances at Poole. While work is carried on there, the Gas Council will continue to use the laboratories of the Southern Gas Board. On the other hand the existing staff at Nechells will continue to deal with the requirements of the West Midlands Gas Board.

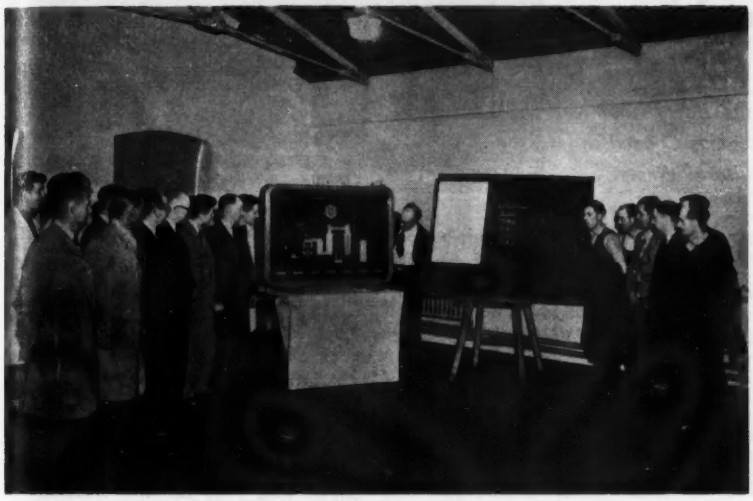
It is anticipated that if and when a third centre is established, the Directors of Research will form a Technical Committee to discuss their problems in detail together. For the time being, the work of the Gas Research Board at its headquarters at Beckenham will continue under the direction of Dr. J. G. King.

We understand that collaboration between the Gas Council and the Society of British Gas Industries in research projects of mutual interest will be provided for by committees at local level for the joint discussion of particular problems.

It is also understood that the Institution of Gas Engineers has agreed with the Gas Council that the autumn research meeting shall provide the platform for the publicising of the work of the Research Committee.

TRAINING WATER GAS OPERATORS

Water gas plant operators from Cambridge, Bedford, and Peterborough, together with technical and supervisory staff shared a most interesting experience on June 29 at the Cambridge gasworks when they attended a conference arranged by Mr. Hunter-Rioch, General Manager of the Cambridge division. The purpose was to introduce a completely new instructional procedure for the benefit of water gas plant operators and supervisors. With the aid of an illuminated working flow



Training session at Cambridge works. Third and fourth from left in front row are Mr. J. Hunter Rioch, Divisional General Manager, and Mr. E. H. Winch, Engineer and Manager, Cambridge District.

diagram, loaned by Humphreys & Glasgow, Ltd., the process for the manufacture of carburetted water gas was clearly illustrated and a demonstration given of the full sequence of valve movements and the direction and types of gases produced at various stages in the operating cycle. Mr. W. J. Spiller, Deputy Engineer and Manager at Cambridge, explained the manner in which the large scale production of carburetted water gas is controlled. The value of this novel experiment in training and the interest aroused were reflected by the many questions which were forthcoming, and the view was expressed from all quarters that in conjunction with actual plant operating experience, the introduction of the new method of training was a notable step forward.

WORLD RECORD JUMP

Mrs. Lerwill, better known as Miss Sheila Alexander, Private Secretary to the Woodall-Duckham Companies, established a new world record for the women's high jump at the Women's A.A.A. championships held at the White City on July 7, when she jumped 5 ft. 7¼ in. clear.

She already held the British record standing at 5 ft. 6¼ in., and has won the European championship.

FESTIVAL FLAMBEAUX

Our photograph below shows the gas flambeaux at the Battersea Festival Pleasure Gardens.

Gas Board Valuations

The method by which the assessor of public undertakings (Scotland) fixed the value of all lands and heritages belonging to or leased by the Scottish Gas Board was upheld on July 6 by the Lands Valuation Appeal Court in Edinburgh, but the Court made certain adjustments the effect of which will be to increase the valuation of Scottish Gas Board undertakings throughout the country.

Twenty-three Scottish burghs and two county councils appealed against the assessor's valuations. The counties concerned were Stirling and Argyll and the burghs included Leven whose appeal was taken as the leading case, Ayr, Cumnock, Falkirk, Girvan, Johnstone, Kilmarnock, Kilwinning, Port Glasgow, Prestwick, and Saltcoats.

Before the Gas Act, 1948, came into force, the undertakings of the various authorities were valued by local assessors. Since the Act was operated this work has been done by the Public Assessor. For 1949-50 and 1950-51 the assessor fixed the cumulo value of the Board's undertaking at a figure which substantially was the aggregate of the previous values of the separate undertakings which existed before the Act was operated. The cumulo value was then allocated among the separate rating areas in proportion to the structural cost of the undertakings in each area.

Appellants maintained that the cumulo value fixed by the assessor was erroneous and based on accounts and statements of yearly revenue which were incomplete.

The Court, giving judgment in the appeal by the Burgh of Leven, found that payments of war damage contributions made by the Gas Board in 1949-50 do not fail to be included among working charges of their undertakings for valuation purposes. Their Lordships also held that interest on the value of gas cookers and other appliances sold by the Board under hire-purchase agreements is not a proper deduction from net revenue under allowances for tenant's plant.

Otherwise the Court confirmed the assessor's valuation. The effect of the findings, it was stated, would be to increase the valuation of Gas Board undertakings throughout the country.

AROUND THE SHOWS

THE 'ROYAL'

The 'Journal' paid a special visit to the Royal Show at Cambridge, and we review below the Gas Council's display at this greatest of all agricultural events.

EVEN to hardened show-goers (as we are rapidly becoming) the 'Royal'—if only by reason of its tremendous size and scope—is something of a breathtaker. This is agriculture's biggest shop window, and it is fitting that gas should have a conspicuous place in that window of Britain's largest single industry, since it is contributing more and more to that industry as the years go by. We were gratified, therefore, to find at Cambridge one of the most striking gas exhibits of its kind we have yet seen at this sort of show; also to find that the gas display had emerged triumphantly from its extremely poor position at Oxford last year to what was unquestionably almost the best site on the whole of the 150-acre showground—just within the main entrance.

There is temptation to digress from the strict path of objective description of the gas exhibit to tell the 'gas man' who may not have the opportunity of visiting many agricultural shows some of the highlights of this greatest of all agricultural events—with its bewildering avenues of trade exhibits, its championship competitions, its grand parades, its demonstrations of complicated machines that do practically everything from milking a cow to excavating enormous silage pits, its examples of all varieties of rural crafts and activities, and its displays of all that is best in livestock both as regards pedigree and performance. Indeed, in no other place in the world can be seen gathered together in one spot so large a collection of Britain's finest farm stock. However, we must regretfully confine ourselves to just a few lines of historical background to complete the picture.

When the Royal Agricultural Society of England held its first Show at Cambridge in 1840, three years after its formation, it occupied no more than five acres on Parker's Piece, then the County and University cricket ground. The livestock entries totalled 337 and the implements 115. Today, the show, on its fourth visit to Cambridge, covered 30 times the original area, and nearly 5,000 head of livestock competed for prizes totalling £20,000. And the event as a whole cost some £85,000 to organise. As a footnote for the student of phrase and fable, we would add that running through the centre of the site is Hobson's Brook, brought there to provide drinking water for part of Cambridge by the 17th century horse-keeper, Hobson. From him originated the expression 'Hobson's Choice.'

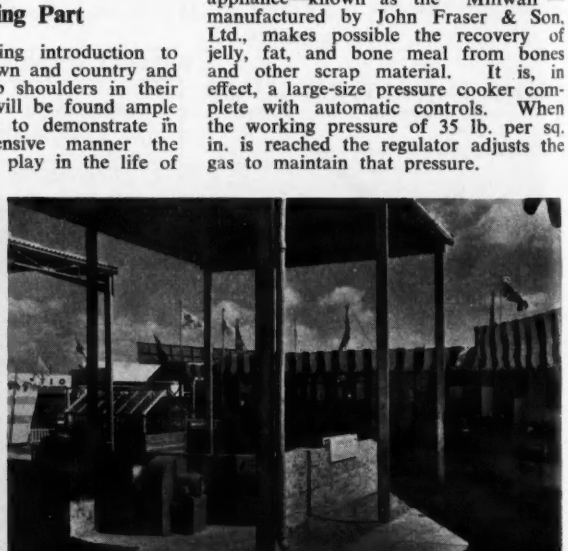
A Growing Part

From the foregoing introduction to the Show, where town and country and overseas visitors rub shoulders in their tens of thousands, will be found ample justification for gas to demonstrate in the most comprehensive manner the growing part it can play in the life of the farm and the countryside generally.

The gas industry took part in the Royal Show on a national basis for the first time in 1950, when the gas exhibit proved such a success that the Gas Council was encouraged to stage this year an even more ambitious display, in co-operation with the Cambridge Division of the Eastern Gas Board.

The first thing which caught the visitor's eye was the striking archway spanning the principal approach to the gas exhibit. Our heading photograph shows this, with the two flanking gas flamebeaux, which burnt throughout the four days of the event. A small admixture of acetylene was introduced to give stronger effect to the gas flames. Below each flambeau revolved two model aeroplanes while suspended between was a big cut-out figure of Mr. Therm.

A series of booths around the front perimeter of the site contained examples of industrial equipment for the farm, such as steriliser, pasteuriser, steam boiler, and a bone digestor which attracted a good deal of interest. This appliance—known as the 'Millwall'—manufactured by John Fraser & Son, Ltd., makes possible the recovery of jelly, fat, and bone meal from bones and other scrap material. It is, in effect, a large-size pressure cooker complete with automatic controls. When the working pressure of 35 lb. per sq. in. is reached the regulator adjusts the gas to maintain that pressure.



Two further views of the Gas Council display at the Royal Show.

The central feature of the display was two small Dutch barns in which were installed coke-fired grass drier and grain drier—both in operation throughout the Show. The former was the Slade-Curran drier, which has a consumption of 1 cwt. of coke per hour and dries a load of grass in three to five hours according to the moisture content. It has a total output of between three and four tons a week and is particularly suited to the small and medium sized farm with 40 to 120 acres of grass. This drier can also be used for drying grain in sacks. The platform type grain drier forming the other exhibit was similar to that at the Royal Counties Show at Southampton described and illustrated in the *Journal* for June 27.

An incubator and five-batch brooder showed that gas can provide efficiently for the poultry breeder, with no fear of the result of power cuts, while the 'Daisy' greenhouse heater exemplified gas service for the horticulturist.

On a covered platform in a semi-circle behind these industrial exhibits was the domestic display, each series of appliances attractively arranged in a separate bay. A new appliance caught our eye in the domestic coke section—namely, the 'Cokette' gravity feed boiler by Janitor Boilers, Ltd., of Camberley, Surrey. This is nicely finished in white enamel and carries sufficient fuel for approximately eight hours' continuous operation on full load, and consequently much longer under average load conditions. Primary air is controlled by an electromagnetic damper operated by the boiler thermostat. It is designed to burn a range of domestic cokes from No. 3 down to beans, and an ingenious lever at the side is moved into any one of four positions according to the size being used—the size being represented diagrammatically against each position.

In the washing machine section, demonstrations of the Morley gas-electric machine drew much attention, as also did the complete gas kitchen unit complete with every modern fitting. Finally, at one side of the display was a comfortable little reception room and office with a balcony overlooking one of the main avenues.

Altogether, a very fine effort on which the Gas Council and everyone else concerned are to be warmly commended—especially on the fact that much of the apparatus was 'live' served by a 4 in. main from a nearby housing estate.

It is gratifying to see that the industry is becoming increasingly conscious of the enormous value of these big agricultural shows as 'exhibition grounds.' They attract far larger 'gates' than the average town exhibition, and the additional care and attention given to staging a really worthwhile display is amply justified.

We also believe that no description of such displays is worth the paper on which it is printed unless it also contains constructive criticism where such is justified. There was little indeed to criticise in the gas display at the 'Royal,' but the Gas Council would think less of us if our account was no more than a string of compliments. We conclude our story, therefore, with just one or two little points where we think improvement could be effected another time.

For instance, although the Show fell outside the normal poultry breeding season we feel a few live chicks could have been produced from somewhere to add interest to the brooder (even if the weather was so hot that there was no need to light the gas!). Arrangements should have been made for the grass in the drier to be changed at proper intervals. It is no advertisement either to the equipment or the fuel to take up a handful of grass (as the critical farmer will surely do) and find it so dry after the first few hours that it almost crumbles to powder. And much as we harp on the desirability of 'live' appliances, we fear that the expert tomato-grower will at least have raised his eyebrows at the effect of the heater on the plants in the greenhouse. The weather during the Show was such that there was every reason for this 'live' appliance to be discreetly extinguished.

A Dairy Setting

Again, after inspecting the tremendous electricity display which featured the 'all-electric farm" and even included the erection of a small house, we felt that while the gas exhibit certainly contained most of the dairy farmer's requirements, the actual connection with the dairy was not quite close enough. In public appeal there is all the difference between showing isolated equipment and showing the same equipment in its proper surroundings. We throw out as an idea for future agricultural shows the setting up of a model dairy with all the equipment in its proper place and, better still, showing the full sequence of events with milk flowing right through from the cow to the consumer—finishing up, of course, in the latter's gas refrigerator. (After all, real milk need not be used; a suitable substitute presents no obstacle to the keen display man.)

Some idea of the vastness of the Royal Show can be obtained from the fact that in addition to the great arenas and judging rings, the acres of livestock tents, grandstands, restaurants, and so forth, there were upwards of 700 individual exhibitors. Among these were a number of names well-known in the gas industry, though at Cambridge naturally showing equipment more closely related to agriculture than to gas.

The Quasi-Arc Co., Ltd., showed examples of their welding electrodes for welding mild steel, special steels, cast iron, and non-ferrous metals; also welding plant and equipment and full scale models of welded work. The Four Oaks Spraying Machine Co., Ltd., exhibited their equipment for lime-washing, fruit tree spraying, flame guns for weed destruction, including knapsack sprayers, pneumatic sprayers and a variety of different nozzles for special applications. Stewarts & Lloyds, Ltd., had a stand devoted to the display of their steel tubes for farm water supplies.

Murex Welding Processes, Ltd., showed their welding equipment, electrodes, and accessories. C. & C. Wakefield & Co., Ltd., featured lubricants, oils, greases, and rust-preventatives for agricultural and all industrial machinery. Air Control Installations, Ltd., specialised in pneumatic equipment, fans, dust control units, &c.

The British Oxygen Co., Ltd., had a mobile display vehicle carrying cutting machines and welding apparatus; also oxy-coal gas and air acetylene for lead burning, brazing, and other heating applications, ferrous and non-ferrous welding rods and fluxes. The Dunlop Rubber Co., Ltd., displayed, in addition to examples of heavy duty agricultural tractor and machinery tyres, high pressure hose, flexible pipes for tractor tool bar operation, tipping gear, hydraulic loaders, and similar applications; also portable air compressors.

Imperial Chemical Industries, Ltd., showed a wide range of interests in agriculture on its stand with emphasis on greater self-sufficiency and greater output from grassland.

Dieterichs Memorial Prize

The William Dieterichs Memorial Prize Fund has now been established and the Institution of Gas Engineers has agreed to act as trustee. The current issue of the *Bulletin* of the Institution announces that the prize will be awarded, generally annually until the fund is exhausted, subject to the following regulations, which have been approved on the suggestion of the Industrial Gas Development Committee, of which Mr. Dieterichs was Chairman for many years:

(1) The value of the prize shall be £15.

(2) The prize shall be awarded to the author or joint authors of a technical paper, on the subject of industrial gas, delivered during the calendar year on any recognised British platform, subject to the paper being, in the opinion of the adjudicators, of sufficient merit to warrant an award.

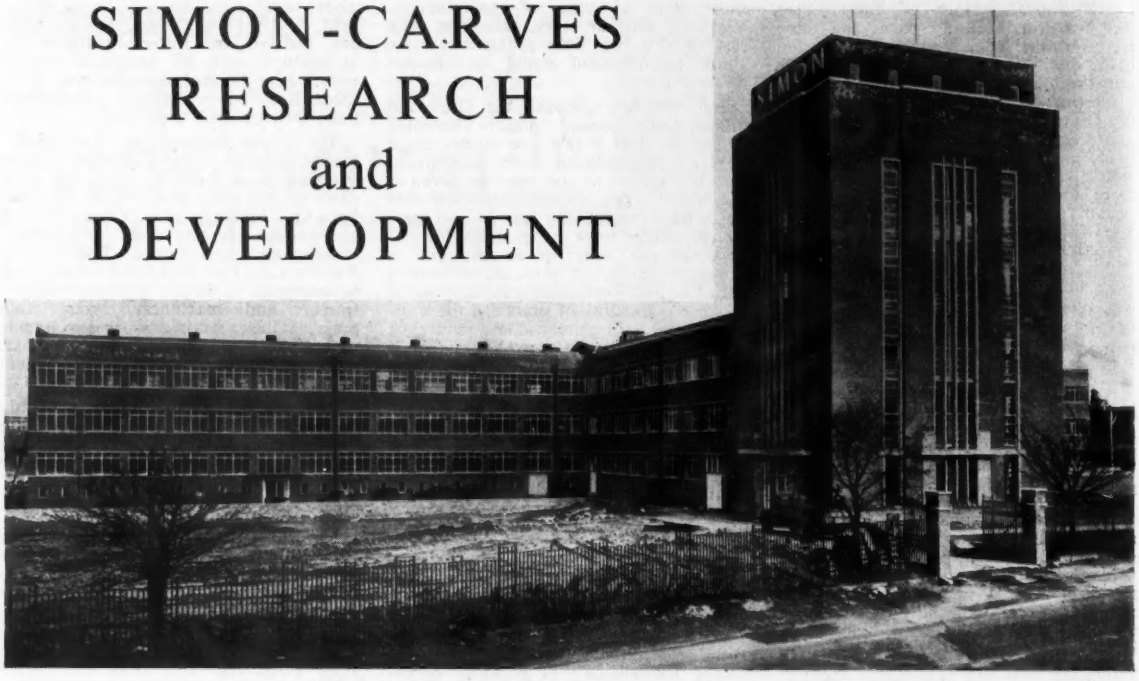
(3) In the case of joint authors, the value of the prize will be divided equally between them.

(4) Eligibility for the prize will be restricted to persons working within the gas industry, as defined in By-Law 1 of the Institution of Gas Engineers, as follows: 'The Gas Industry means (a) the manufacture or distribution of gas, or (b) the design or construction of works machinery, plant or apparatus for the manufacture, distribution, or use of gas, or (c) the manufacture or working-up of by-products by gas undertakings, or (d) research work connected with the manufacture or distribution of gas or its application.'

(5) The prize will take the form of books, instruments or other articles of educational value, or technical equipment, selected by the recipient and approved by the adjudicators.

The mechanism for the collection of suitable papers and for adjudication will be dealt with by the Industrial Gas Development Committee in the near future.

SIMON-CARVES RESEARCH and DEVELOPMENT



JULY 3 saw the official opening by Sir Henry Tizard, G.C.B., A.F.C., F.R.S., Chairman of the Advisory Council on Scientific Policy, of new research and development buildings of the Simon Engineering Group at Cheadle Heath, Stockport. The occasion was marked by a luncheon attended by many distinguished guests in many fields of engineering and public life.

The research department is a central organisation serving all the Simon-Carves contracting departments. Its work falls under three main headings: mechanical and chemical testing, research, and information.

In a business so largely concerned with various forms of coal preparation and utilisation, exhaustive coal tests are essential in determining plant design and performance guarantees. No fewer than nine laboratories, with ancillary rooms, are devoted to the preparation of samples, washability tests, and examination of the coking qualities of coals for carbonisation, and of the calorific value, ash fusion, and grindability of coals for boiler firing. Extensive facilities are also provided for testing the refractory materials used in coke ovens and boiler combustion chambers, and for metallurgical tests (including heat treatment and microscopic examination) of the metals used in plant construction. Building materials are also subjected to test. There is a large analytical laboratory for general chemical analysis.

Research

A large and varied programme of research, much of it physical, lies ahead. Some of the problems concern specific domestic aspects of well-known fields of research, while others lie in new fields; some relate to the activities of the Company as a whole, while others are of purely departmental interest.

One field of common interest is the behaviour of small particles, with special reference to sedimentation, the collection, extraction, and disposal of industrial mists and dusts, pulverisation of coal, combustion of pulverised fuel and sulphur-bearing ores, and magnetic properties. The problem is complicated by the fact that the particles involved are not of uniform density, a difficulty which applies to certain aspects of electrostatic precipitation, to assessments of boiler flue dusts, and to the determination of the stability of dense media in coal washing baths. Dense medium coal washing calls for a fundamental study of the magnetisation and de-magnetisation of such particles, and there is need to develop methods of identifying and analysing the magnetic constituents of ores.

A major problem at present is the supply of sulphur for sulphuric acid production, and among the sources under consideration are recovery from waste gases and flue gases, removal as hydrogen sulphide from town gas, and the flash roasting of iron pyrites. Interest is also being maintained in the micro-biological process. Further study is required on certain aspects of the problem of effluents from gasworks and coke oven plants, and there is ample scope for work on the corrosion-resistance of metals used in plant construction.

More fundamental or long range in character are the study of heat and mass transfer coefficients to provide absorption data for sulphuric acid manufacture, and the study of the electrical factors in electrostatic precipitation, with special reference to migration velocities, the wave form of applied potentials, and corona discharge.

The work of the information and library section at this early stage is primarily concerned with scientific and technical needs, but its activities may later be extended to embrace all the needs of the Simon Engineering Group.

Development

Development, broadly speaking, is dealt with departmentally rather than centrally, the primary purpose of the development engineers being to provide data for the design of efficient commercial plants of the widely different types with which their respective contracting departments are concerned.

The work falls into two general categories. The first involves new principles and the study of new processes from the laboratory through pilot plant stages of increasing size; the object of the early stages is usually to gain data on the operation of individual units of plant, from which successively larger units are designed, while in the later stages the units are integrated into a complete plant. The second category involves no new principle but calls for a study of the operating characteristics of existing full scale plants, the results being applied to the design of future installations or the modification of those already in use.

The erection of pilot plants for the study of new processes is provided for by the development building. The pilot plants are designed so that they can be modified or replaced as occasion demands. Certain plants may become permanent when the basic design and operating characteristics have been established, and they can then supplement the work of the testing laboratories by serving as large scale test units in which clients' materials can be processed.

Site investigations on commercial plants are facilitated by a mobile laboratory fully equipped with test apparatus and instruments.

The development building at present houses three pilot plants in various stages of development.

There is a coal washing plant employing a magnetic dense medium prepared from blast furnace flue dust. It incorporates a magnetic medium cleaning system, much of which is novel and has been developed from investigations on separate small scale units. The washer, which is fully mechanised to treat up to 20 tons of coal per hour, now represents an advanced stage in the integration of units into a working pilot plant, and when current investigations are complete it will be retained as a standard test unit.

The coke oven plant is already a test unit, development having been completed some years ago. The oven can carbonise 10 cwt. of coal, and the results can be correlated with those of full scale practice. The unit incorporates coal crushing and blending plant, and equipment is available for examining the coke produced, a special feature of this equipment being an integrating radiometer for establishing the combustion characteristics of domestic coke.

The pilot distillation plant exemplifies the early stages in developing a new process, of which the basic operating characteristics are now being studied on a 100 gal. scale. The fractionating column is of an entirely new design, which shows promise of giving high efficiency in small volume. Plants or units of plant have already been erected, tested, and dismantled after the completion of experimental operation, and others are contemplated.

The work done on existing full scale plants comprises the execution of guarantee and performance tests on coke ovens and coal washing plant, the investigation of pressure relationships in coke ovens, the determination of shrinkage characteristics in coking coals, and the establishment of heat and material balances in coke oven by-product plant.

Short term studies are often called for on problems of local requirements at the site of some particular full scale plant. When practical tests are needed, laboratory bench experiments are normally adequate. These are carried out with the collaboration of the research department.

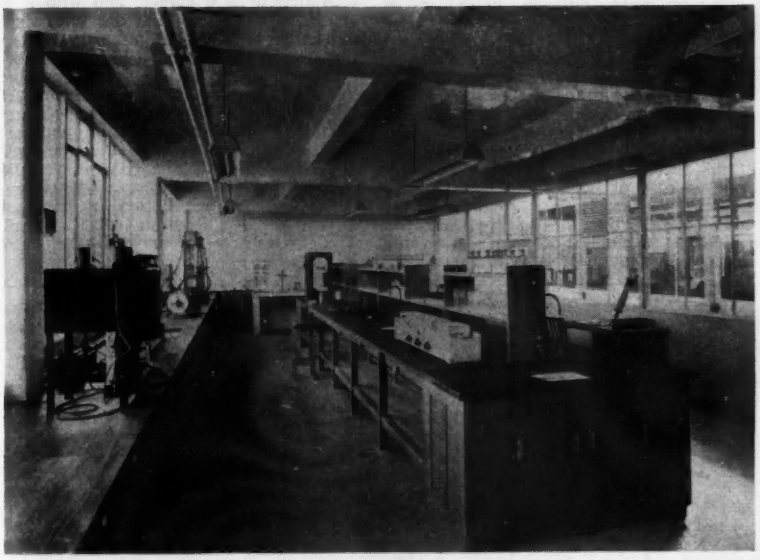
Long term work is undertaken on the development of process equipment for sulphuric acid production by the contact process, sulphuric acid recovery and concentration, sulphur recovery, electrostatic precipitation, gasworks ancillary processes, and mineral preparation; the development work on mineral preparation is conducted in London by Huntington, Heberlein & Co., Ltd., a firm recently acquired by Simon-Carves, Ltd., as a wholly-owned subsidiary. Some of the experimental work is done with the co-operation of clients on plant supplied to them. A wet purification process for town gas was developed in this way, and equipments for sulphur recovery and the treatment of phenolic effluents are being developed at gasworks. A pilot plant for the recovery of sulphuric acid from spent pickle liquor at steelworks is being developed jointly by Simon-Carves, Ltd., and the British Iron and Steel Research Association, with the co-operation of the Steel Company of Wales, Ltd. It is probable that certain features of the process will be examined in the development building before a complete pilot plant is built in South Wales.

Other long term projects will be carried out with apparatus installed in the development building. A test assembly of axial cyclones for gas cleaning will be operated, and work on the electrostatic precipitation of dusts and mists will be undertaken later at the pilot plant stage.

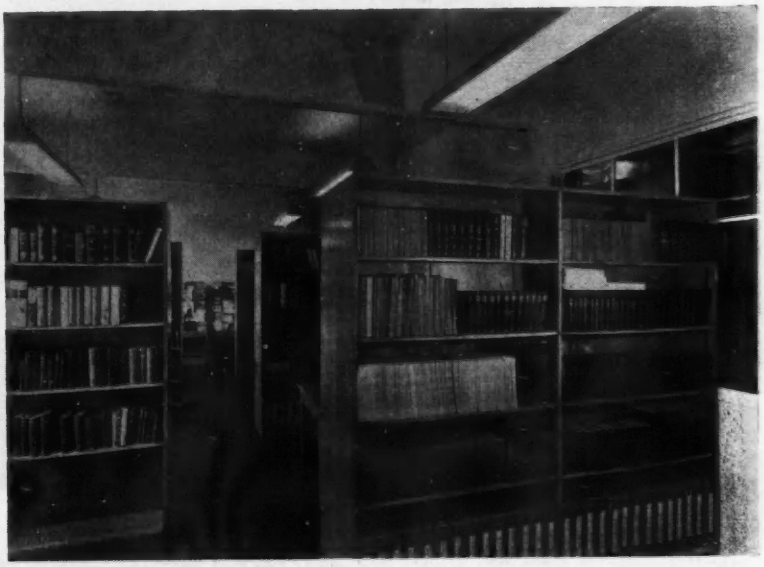
In regard to the general behaviour and properties of coals, the development staff can draw upon the wealth of information accumulated by Simon-Carves, Ltd., since the beginning of the present century, and when special as distinct from routine analyses are called for the new laboratories are admirably equipped to perform them. It is also intended to install in the development building a combustion pot to determine the behaviour of solid fuels on travelling grate stokers and spreader stokers, and a new type of pulveriser, which will be used for extensive tests on coal pulverisation when the characteristics of the pulveriser itself have been established.

The effects of ammonia, oxygen, and carbon dioxide in boiler feed water are to be investigated on a pilot plant scale in the research laboratories. Problems of carry-over are examined at sites, a measuring apparatus having been developed for this purpose. Site investigations are also planned on heat transmission in combustion chambers with the aim of determining the optimum spacing of tubes. Flow distribution and resistance in water tube boilers will be investigated in a test rig in the development building.

Another test rig in the development building is planned for experimental



Fuel laboratory for coal-carbonisation and coke reactivity tests.



The Library.

work on the most effective type of expanded joint for high pressures. Certain practical work in this field has already been accomplished and has enabled Simon-Carves boiler erectors to be provided with a guide which is believed to differ from that used by other firms.

The power plant department also participates in a practical way in the activities of the boiler availability committee, which studies the problem of deposits on external boiler surfaces, and in the research on boiler circulation which has been intitiated at Cambridge University.

A Family Business

At the luncheon, Lord Simon outlined the growth of the firm—a family business—which started in 1879 as coke oven manufacturers and flour milling engineers. During the last five years, he said, the flour-milling department had successfully invaded the Canadian and American markets. The coke oven department had a large home market and had recently secured an order from the United States for a large coke oven battery.

Other contracts included one for a grain elevator costing £2,000,000 from the Argentine Government, a £2,000,000 contract for a coal washery in Turkey, and power station contracts in Australia and the Middle East amounting to about £6,000,000. The chemical plant department had built most of the sulphuric acid plant in this country, and now had the main contracts for two new anhydrite plants.

The Company had been appointed the main contractor for the newly formed Sulphuric Acid Corporation's plant at Widnes, which would cost £3,500,000, and the I.C.I. plant at Billingham, which would cost £1,500,000. Both were being built in an effort to counteract the shortage of sulphuric acid which threatened British industry.

Turning to research, Lord Simon said that one of their main customers was I.C.I. He hoped that nationalised industries, such as the Coal Board, would work closely with them. They were doing all they could to get the universities to work with them, but they still had some way to go, as relations in this country between universities and industry were not as close as in America.

Sir Henry Tizard, stressing the importance of research, said that people in this country thought of science either as something which produced weapons of war or something which produced such toys of leisure as television. 'I do not think there is yet a real appreciation in this country of what science means,' he said. 'Leisure itself is a result of the direct application of science, and the advance of civilisation depends on the rising productivity of labour.'

Industrial Art Bursaries

The Royal Society of Arts' annual industrial art bursaries competition will this year include sections for the design of carpets; domestic electrical, gas, and solid fuel burning appliances; dress textiles; electric light fittings; footwear; furnishing textiles; men's wear fabrics; plastics; and wallpaper.

A bursary of £150 in value is offered to the winning candidate in each section (three bursaries are offered in the dress textiles section and two in the plastics section), and the Sir Frank Warner Memorial Medal is offered for the best design submitted in the textile group.

The competition is open to full-time, part-time and evening-class students between the ages of 17 and 30 on September 1, 1951, who intend to take up industrial design as a career, and who have studied for not less than one term since September 1, 1950, at an art, architectural, technical or other college or school approved by the Society for the purpose of the competition. Entry in the domestic solid fuel burning appliances section is also open to any draughtsman, clerk, or similar person, within the same age limits, already engaged in the solid fuel burning appliances industry, provided that his application is sponsored by the Coal Utilisation Joint Council. The closing date for the receipt of entry forms is October 15.

Photo: H. Tempest (Cardiff) Ltd.

The new coking plant at Nantgarw, South Wales, the Royal visit to which was one of the engagements which had to be cancelled owing to the King's illness. The plant, which is now being heated up before going into production, will feed large quantities of coke oven gas into the Wales Gas Board's South Wales grid.

FESTIVAL FARE FINAL

H.R.H. Princess Elizabeth Presents the Prizes

H.R.H. Princess Elizabeth presents the first prize to Mrs. Hilda Upton, of Loughborough.

One of the Competitors at Work

BY way of rounding off the report in our leading columns we publish on this page some photographs taken on this historic occasion, when on July 10 in the Park Lane Hotel, London, H.R.H. Princess Elizabeth honoured the gas industry by presenting the prizes to the winners of the Women's Gas Federation Festival Fare National Cookery Competition.

Dame Vera Laughton Mathews (Chairman of the Festival Fare Committee) presided and warmly welcomed the Princess, prior to which Mr. Freddy Grisewood gave the 800 guests a lively commentary on the proceedings.

While the names of the four prize-winners are probably well-known by now our report of the event would not be complete without their mention here:

First.—Councillor Mrs. Hilda Upton, Loughborough, Leicestershire (East Midlands).

Second.—Mrs. Bloxham, Portsmouth, Hampshire (Southern).

Third.—Miss Noble, Hurworth-on-Tees, Durham (Northern).

Fourth.—Mrs. Catto, Alford, Aberdeenshire (Scottish).

The judges were Miss Phyllis Garbutt (Principal of the Good Housekeeping Institute), Mr. Philip Harben (Television Cook), Miss E. R. Smyth (Ministry of Education Staff Inspector of Homecraft), and Mr. J. Vincent (Principal of the Hotel School, Westminster Technical Institute). Each of these experts said a few words, commending the high standard of the finalists' work.

It may be of interest to many in the industry to know that the four winners used the following gas cookers: Parkinson 'Crest' cooker; Vulcan 966 cooker; Stoves, Ltd., 1492 cooker; and Radiation 1840.

General view of the gas kitchen units in the Ball Room of the Park Lane Hotel, London.

Gas Explosion in an Ice Cream Parlour

High Court Judgment

JUDGMENT was given by the Lord Chief Justice (Lord Goddard) in the King's Bench Division recently in a case in which R. E. Glennister, Harringay Road, West Green, claimed damages from A. G. Condon, Harringay Ice Cream Parlour, 351, Green Lanes, Harringay, in respect of injury suffered in a gas explosion at the defendant's premises last year. The Eastern Gas Board was joined as defendants. Plaintiff was awarded £150 and costs against Condon, but the Court found there was no negligence or breach of statutory duty by the Gas Board, for whom judgment was given, Condon being ordered to pay the costs of the Board direct.

Delivering judgment, Lord Goddard said the explosion was a fairly violent one, and unhappily a great number of people were injured in it. He had been told that 36 people were involved. Mr. Condon took the premises, previously used as a shop for some other business, about Christmas, 1948, and decided to fit them up as a refreshment bar, involving the fitting of various appliances on the ground floor, where there would be points for gas, including gas urns which would stand on the counter, and a gas oven at the back of the shop, to which it was his intention to add another.

A Second Service Pipe

With a view to a satisfactory installation he had a new service pipe put into the shop, to supply points to the counter and the new cooker at the back. At that time there was an old supply service, which had probably been in since the premises were erected about 1888. The old domestic service pipe supplied gas to one stove on the ground floor, near to which the new stove was to be fitted, and Condon's idea was that the supply from the new pipe was to be laid so as to serve both stoves. The domestic supply gave gas to two floors above, on each of which there was a separate meter.

On the first floor there was a gas cooker. The pipe went up to the second floor—what it supplied there his Lordship had not been informed—but Mr. Condon, for his domestic convenience, decided to install a geyser. Having installed the geyser he found it was not satisfactory.

Rust Removal

He did not ask the gas undertaking to install it, but sent for it on at least two occasions when he found he was not able to get a proper supply of hot water from the geyser. On the first occasion some adjustments were made to the geyser, which still remained unsatisfactory. The next step was to send round a suction van to suck out any obstruction there might be in the pipe. A certain amount of rust was taken out of the pipe which, he gathered, was what was to be expected. The fact that the suction plant was kept and supplied as a service by the Board, and the fact that it was used not only at this house but at other houses in the neighbourhood seemed to him to show that it was an ordinary service which was performed by gas undertakings, and that there was nothing unusual in the consumer complaining about his gas supply and the Board sending the plant in the hope of remedying the trouble, which in many cases at any rate yielded satisfactory results.

One of the witnesses had said that the suction van had been to her house and that after its application the gas supply became satisfactory. In this case it did not become satisfactory, and Mr. Condon's geyser still failed to give him any hot water. Thereupon a higher official of the Board, a Mr. Pintoff, visited the premises to see if he could find any reason why the geyser on the second floor was not yielding proper service. Mr. Pintoff, when he arrived, no doubt thought—and it was a very reasonable thing to think—that the geyser was supplied by the new service pipe. It would be unusual, and no doubt was unusual, for premises to be supplied by more than one service pipe.

As it was no doubt quite obvious to Mr. Pintoff that the first service pipe must have been laid by the Board's predecessors, so that they knew all about it, he naturally assumed that the gas for the geyser was coming off that supply. Mr. Condon disabused him of that and said there was another supply, at which he expressed some surprise. Mr. Condon therefore took up some small pieces of floor board to show him the old pipe. Mr. Pintoff saw it and, as he thought, discovered—and no doubt it was true—why it was not giving a satisfactory supply.

Quotation Submitted

Having seen the installation to the geyser Mr. Pintoff formed the opinion that the trouble was that whereas there was a length of pipe coming from the main of only 1 in. diameter the supply which went up the house was only ¾ in. diameter. He decided that the way to cure this state of affairs so far as the geyser was concerned was to re-lay the old supply pipe.

No complaint had been made with regard to the gas supply to the first floor, which was supplied through the old installation; it was only the geyser on the second floor from which there was trouble. Notwithstanding a mistake in an estimate submitted, his Lordship was satisfied that what was intended was that the new run which Mr. Pintoff was going to put down would have been a run from the pavement—*i.e.*, from the main—and it would have been a larger size than the existing pipe. Of course if that had been done there would have been no trouble. A quotation was submitted, according to which the consumer was to pay for running the pipes up the wall, making the connection, and taking the pipes up to the second floor; the cost of the service pipe would have been borne by the Board.

Mr. Condon said it was not convenient for him at that time to pay out £9 to have the work carried out, and apparently he was content for the time being to manage with the unsatisfactory geyser. He then wanted something else done—namely, to have an alteration made in the layout of the pipes on the ground floor. He wanted a partition to be taken down, and he wanted two stoves. He also wanted the supply pipe which existed so far as the second stove was concerned to be moved away from the stove. Why he did not apply to the Gas Board to do that work his Lordship did not know, except he said he wanted it done very quickly. What he did was to take the advice of the foreman of the people who had been doing the repairs and alterations to the ground floor, and the foreman advised him to enlist the services of a Mr. Ellard, a brass turner who no doubt knew a good deal about pipe fixing but who had never dealt with live gas pipes—pipes actually carrying gas. Unfortunately this was an old installation not fitted with a cock by which the gas could be turned off.

He came to do the work on a Sunday, doing it in his own time. There was no reason to doubt that so far as his knowledge of making joints was concerned the job might have been quite satisfactory. His Lordship did not think he would be justified in holding that the escape which happened arose from any leak at the joint or elbow where the junction was made between the two points, but it involved making a turn of 90 degrees, which in turn necessitated an incision in the pipe, which had been covered with a cap, so that gas would only come through for a very short time while the pipe was open and before the cap was put on. In covering the pipes again when he had made the new angle he had to remove the cap, but again the gas would only escape for a very short time, and with the doors and windows open it would blow away at once.

Eight Hours' Escape

The work was finished at 2.30 on the Sunday afternoon, and from that time forward, although no-one had smelt any escape of gas there before, gas was escaping to such an extent that people passing by in the street could smell it. A next-door neighbour came in and told Mr. Condon there was an escape, and a number of customers who were in the shop that Sunday complained of the smell of gas. Mr. Ellard remained on the premises until about 7.30 p.m., and the smel of gas persisted all that time.

'I can only express surprise as well as regret,' said the Lord Chief Justice, 'that neither Condon nor Ellard, although the smell was such as to attract passers-by, took any steps in the matter.' The sensible thing would have been to ring the Gas Board and say 'There is a bad escape of gas; we do not know where it is; come and find out.' The Board had people standing by for any emergency that might happen, on Sunday as well as any other day, and would have come round and cut off the supply and there would have been no trouble.

What happened was that the escape went on from 2.30, when it was first noticed, until about 10.20 p.m. Until about 10 o'clock all the windows and doors were open—it was one of the few warm days of 1950—so that there was a draught of air which prevented any great accumulation of gas. When the doors and windows were shut there was a sufficient accumulation of gas to cause 'this disastrous explosion', and he was bound to hold that Condon and Ellard were very seriously negligent in allowing the escape of gas, of which they were aware, to go on for something like eight hours.

Gas Board's Duty

His Lordship was certain that there was no duty—and it had not really been contended that there was—on the Gas Board to go round to various houses in the neighbourhood on periodic visits to find out if the service pipes underneath the floors were in a satisfactory condition. In his opinion there was no duty on the Gas Board to investigate the condition of the buried supply pipes unless they had notice; in other words, unless they knew or ought to know from any source that there was danger, or that the pipe was in such a condition that there was danger or that the pipe was in such a condition that it would be unsafe to leave it in that condition.

If there had been anything to show Mr. Pintoff, on his earlier visits to the premises, that there was an actual leak it would have been his duty to have a new pipe put in. If he had thought it was in a condition in which danger might have been apprehended because it was in such an unsatisfactory condition from corrosion or other cause, then it would have been his duty to warn the occupier and tell him that unless he allowed the Board to come in and put in a new service pipe they would have to cut off the supply of gas, because, of course, it was their duty to prevent danger from explosion or gas poisoning.

Mere Age Not Enough

Were the circumstances such as to put Mr. Pintoff on enquiry? He could not think that the mere age, even if it was known, of the pipe was enough. There must be hundreds of thousands of pipes in London that had been in the same position, for a great many years. There was no evidence that it was the practice of gas undertakings to go round after so many years and renew pipes, whether they had had complaints or not. Gas fortunately had such a penetrating odour that a leak was almost immediately detectable, although he agreed there were exceptional cases where pockets of gas accumulated and because of the position they might not be detectable by the smell. In this case when Mr. Pintoff went to the premises there had been previous visits by Gas Board officials to investigate complaints about the geyser. They detected no smell and had no reason to suppose the pipe was in a dangerous condition.

In fact what happened was that at some point away from where Mr. Pintoff had been shown a small section of pipe there was afterwards found, when the pipes were taken out after the explosion, a fracture in the pipe. The holes or slits were due to the eating away of the metal by corrosion. 'If I come to the conclusion that there was nothing in the appearance of the pipe to put Mr. Pintoff on enquiry,' said his Lordship, 'it seems to me that is an end of the case so far as the Gas Board is concerned.' He had seen the actual length of pipe that Mr. Pintoff inspected and he could not find there was anything in its appearance which should have led him to believe that it was a defective or dangerous pipe. In view of that he could not say that the Gas Board was liable, and he had to hold that this unfortunate accident must be put down to what he considered to have been the almost crazy conduct of Condon and Ellard in allowing the escape of gas to go on all through the afternoon, in the amount in which it was escaping. If the pipe was in the condition during the whole of that day in which it was afterwards found the discharge of gas must have been remarkable. It was possible that to some extent at any rate the clay or earth in which the pipe was resting had sealed the crack if it was there before. It might have been there, or it might have been made in the turning given to it by Ellard.

It was probably due to corrosion, and it was in such a position that no escape of gas had actually taken place, and the slight movement might have merely caused it to expose the crack to some extent. He did not think it could have exposed it to full extent, otherwise gas would have been pouring into the place, but he thought there was quite enough to indicate that there was a serious escape going on.

'It is almost impossible to understand how anybody could be so foolish as to allow it to go on for eight hours without communicating with the Gas Board, who could have put it right in a few minutes. In these circumstances, damages being agreed at £150, there will be judgment for the plaintiff in the sum of £150 with costs against Condon. There must be judgment for the Gas Board, and the order will be that Condon pays the costs of the Gas Board direct.'

South Western Section—I.G.E.

Chairman's Day at Exeter

THE summer meeting of the South Western Section of the Institution of Gas Engineers—the first since the conversion of the old Western District of the Southern Association of Gas Engineers and Managers into a separate section—was held at Exeter on July 5 when, in keeping with tradition, the morning was given up to a visit of the Chairman's works. Formerly Engineer and General Manager of the Exeter Gaslight and Coke Company, Mr. H. H. Brown is now Sub-Divisional Manager of the Exeter Sub-Division.

In the past 20 years the gas output at Exeter has risen from 3,718,036 to 5,079,162 therms per annum and coal carbonised has increased from 38,943 to 55,192 tons. During enemy attacks in 1942 a 500,000 cu.ft. holder was destroyed and other holders damaged, including the splitting of the crown of the water gas relief holder. The main power house plant and switchgear, with the exception of one generator, was completely destroyed, but a standby plant of 50 kW had been installed at a distance and this escaped damage. The coke conveyor belt between the night hopper and coke screening plant, with trestles, was destroyed. The rail sidings had a direct hit, and the tar plant, retort house, carburetted water gas plant, and adjacent buildings sustained structural damage. An underground gas oil storage tank was hit and burned out.

In the course of their tour of the works the members of the Section saw a model illustrating future developments. It is the present intention of the South Western Gas Board to establish the Exeter works as one of the main producing units in the Southern Division, and the first development will involve the installation of new gas producing and ancillary plant to deal with 6 mill. cu.ft. per day. This will be extended to 9 mill. cu.ft. before the old carbonising units are dismantled, and it is proposed ultimately to double this capacity for coal gas production to keep pace with the development of further integration and the anticipated growth in the demand for gas.

A party of about 70 partook of an informal lunch as guests of the South Western Gas Board. In the absence of the Chairman and Deputy Chairman, the Board was represented by Alderman H. E. Wright, J.P., of Plymouth, who, following a short address from Mr. Brown, replied on behalf of the Board.

In the afternoon there was a very enjoyable coach trip to the Moors.

Electrical Precipitation

In the report of a paper entitled 'Electrical Precipitation,' published in the *Gas Journal* of April 18, page 170, a typographical error appears in the formula incorporated in the section headed 'Principles of Design and Operation.'

The relevant passage should read 'A simplified formula, relating to precipitators, may be developed as follows:—

$$1 - e = Kt,$$

in which 'e' represents the precipitator efficiency, 't' is the time of treatment in the electrical field, and 'K' is a constant which numerically expresses the charateristics of the gas and dust under the conditions of treatment.'

CONSULTATIVE COUNCILS IN SESSION

East Midlands Tariff Structure

BECAUSE of Parliamentary duties, Mr. H. Neal, Parliamentary Secretary to the Ministry of Fuel and Power, was unable to attend the annual meeting of the East Midlands Gas Consultative Council at Nottingham on July 3, but he informed the Chairman, Alderman C. R. Bates, that he hoped to attend the next meeting. A final draft of the Council's second annual report, more detailed than the first for the benefit of the public, was adopted. Methods of its distribution were considered and it was decided to print a limited number of copies and distribute them to local authorities, public libraries, and gas showrooms.

A report of a joint meeting of the Special Purposes Committee with representatives of the East Midlands Gas Board to discuss a proposed standard tariff structure was presented.

Mr. H. F. H. Jones, Chairman of the Board, said only five different block tariffs were proposed for the whole area. The Special Purposes Committee was informed that in view of the comprehensive zoning of domestic prices it was a necessary corollary that the non-domestic prices, including central heating terms, should be standardised within each of the proposed price zones.

A further report was being prepared in which it was hoped to recommend a uniform area non-domestic block rate and standardised zonal prices related to the proposed zonal domestic prices and production costs and sufficient to ensure that they would produce the total required area and zonal revenues.

The Chairman referred to the proposal of the Board to make a standard prepayment supplement charge of 2d. per therm on the first block of 30 therms per quarter when the standard method of charge was introduced. He was of opinion that the charge was excessive and reminded the Board representatives that the Consultative Council had not yet approved the blocks proposed by the Board or the proposal to limit the prepayment supplement to the first 30 therms per quarter.

The Chairman of the Board stated that further consideration would be given to the proposed supplement.

The Board intimated that it was giving consideration to the possibility of offering, at any rate, certain types of cooker on seven years hire-purchase terms, adding that at the moment it was a matter for the future and must be contingent on supplies of the cookers and the provision of necessary finance.

Presenting a report on organisation and development of the area, Mr. Jones revealed that the cost of major schemes for improving supplies of gas in the area in the next four years was estimated at over £4 mill.

Taunton-Bridgwater Link Up

MR. L. P. INGRAM, Deputy General Manager of the South Western Gas Board, told the Taunton Local Committee of the South Western Gas Consultative Council on July 6 that from October 1, gas sent out from the Langport and Somerton units would be of a declared calorific value for the first time. From the same date the quality of the gas sent out from Martock would be altered so that it coincided with the remainder of the division. As the Board's Northern division would also have achieved standardisation, the result would be that consumers could take appliances from one part to another of the Board's area without modification or replacement of parts being necessary.

Mr. Ingram said that progress on the erection of a new gasholder at Bridgwater had been delayed but there was every prospect of its completion by the end of the year. The new main connecting Bridgwater to Taunton was likely to be completed a year ahead of the anticipated date as the supply of pipes was assured despite the increasing general shortage.

Questioned about the maintenance of gas appliances, Mr. Ingram said it was intended to build up a specially trained staff for the purpose of routine inspection and maintenance of consumers' gas apparatus. No charges were now made, other than for replacements, for the maintenance of domestic appliances.

After the meeting members visited the Taunton meter testing station of the Ministry of Fuel and Power and Mr. R. W. Pearce, the officer in charge, demonstrated the apparatus that ensured accuracy in meters before their issue to the public.

Good Relations with North Thames Consumers

CONSIDERABLE discussion took place at a meeting of the North Thames Gas Consultative Council on June 28 on the powers of entry into consumers' premises possessed by gas boards, arising out of the recent legal action against the Eastern Gas Board. A statement was read from the North Thames Board to the effect that it thought that its relationship with consumers was such that no question of forcible entry was ever likely to arise. The power, which was given to gas undertakers in 1871 and which was re-enacted in the Gas Act, 1948, was one to which the North Thames Board would only have recourse with reluctance. Doubt was expressed by one member as to whether gas boards possessed powers of forcible entry, but if this power was possessed, he said the Council should make representations to have it annulled.

The Chairman (Councillor E. Bayliss) said an appeal had been lodged in the Eastern Gas Board case, and the Council agreed by a majority to adjourn further discussion until the result of the appeal was known.

A report from the Board was received on the year's experiment of keeping open certain showrooms on Saturday afternoons to meet the convenience of consumers. The showrooms were at Kilburn, Harlesden, Camden Town, and Hounslow. The Board had decided to close the Camden Town showroom, owing to paucity of business, but to keep open the other three showrooms for a further experimental period.

Following recent representations it was reported that arrangements for interviewing customers in the showrooms at South Harrow had been improved.

Lunch Hour Opening

A REPORT from the South Eastern Gas Board on the matter of 'freedom of choice' and the necessity for maintaining the standard charge of £4 7s. per dwelling for servicing and providing a prescribed number of gas points, was received at the eighth quarterly meeting of the South Eastern Gas Consultative Council at the Goring Hotel, Victoria, on July 3 (Mrs. D. N. Rathbone, Deputy Chairman, presiding).

Arising from a complaint received from a Raynes Park consumer, the Board had given consideration to the question of showrooms remaining open during lunch hours, and had arranged that where staffing facilities permitted, this provision would be carried out.

The question of the desirability of a uniform price for gas throughout the area was referred to the district committees for consideration and report.

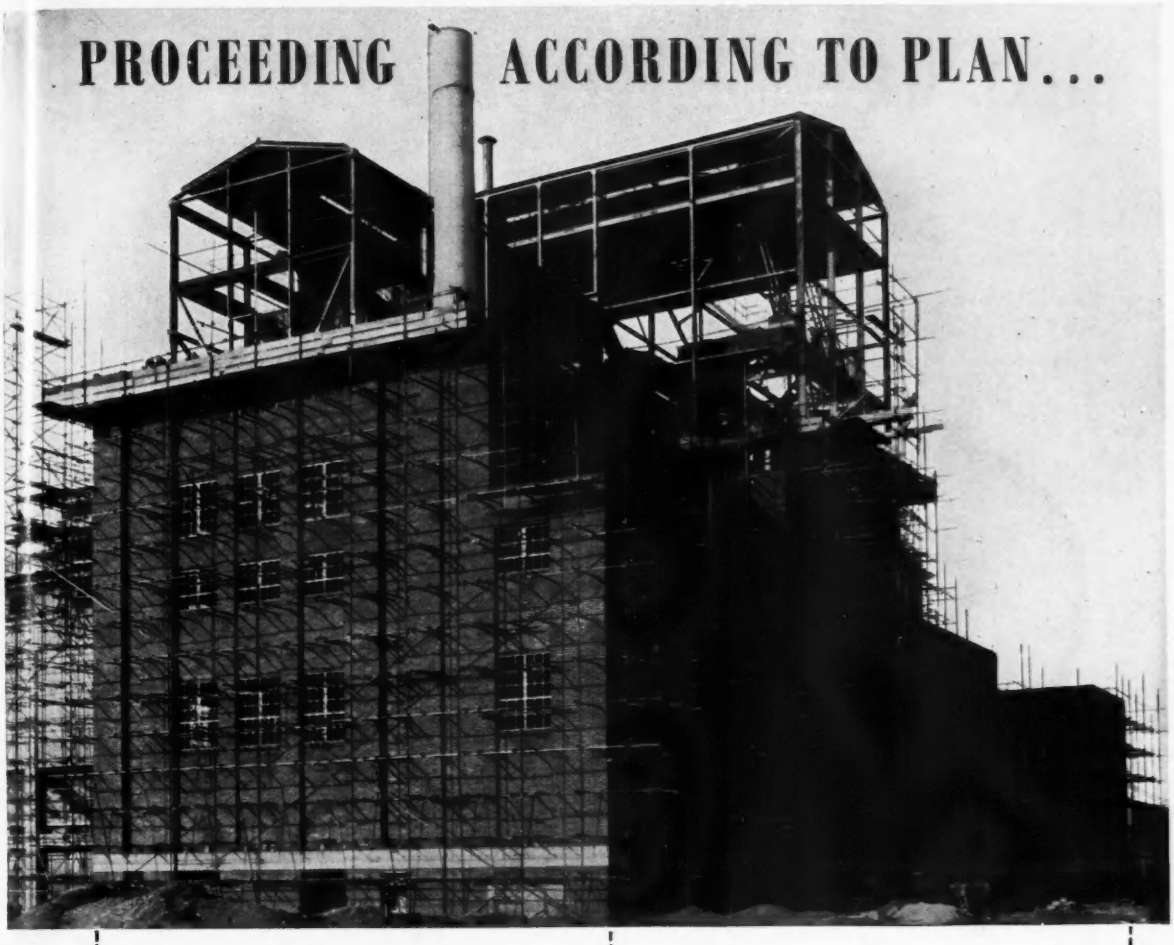
The question of sub-dividing the existing Kent County District Committee was deferred, pending reference to that committee for its views and any suggestions that might be useful to the Council, in order that at the appropriate time an alteration to the Council's district committee scheme might be considered.

The question of taking action relating to the prevailing shortage of shillings for use in connection with automatic meters was again deferred.

The Cannock Branch of the Women's Gas Federation visited the headquarters and works of George Wilson Gas Meters, Ltd., Coventry, on June 19. There were 38 in the party, who were accompanied by Mr. L. W. Burtonshaw, Group Sales and Service Superintendent, and Mr. W. Wallbanks (Snr.), of Sales and Service.

Carbonising Costs.—In the *Journal* of July 4, p. 34, we stated in an editorial that Mr. T. C. Finlayson suggested that the capital cost per therm of gaseous output may be as much as 15% when carbonising Yorkshire as when carbonising Durham coals. Actually this should read: 'The capital cost per therm of gaseous output may be as much as 15% *less* when carbonising Yorkshire than when carbonising Durham coals.'

PROCEEDING ACCORDING TO PLAN...



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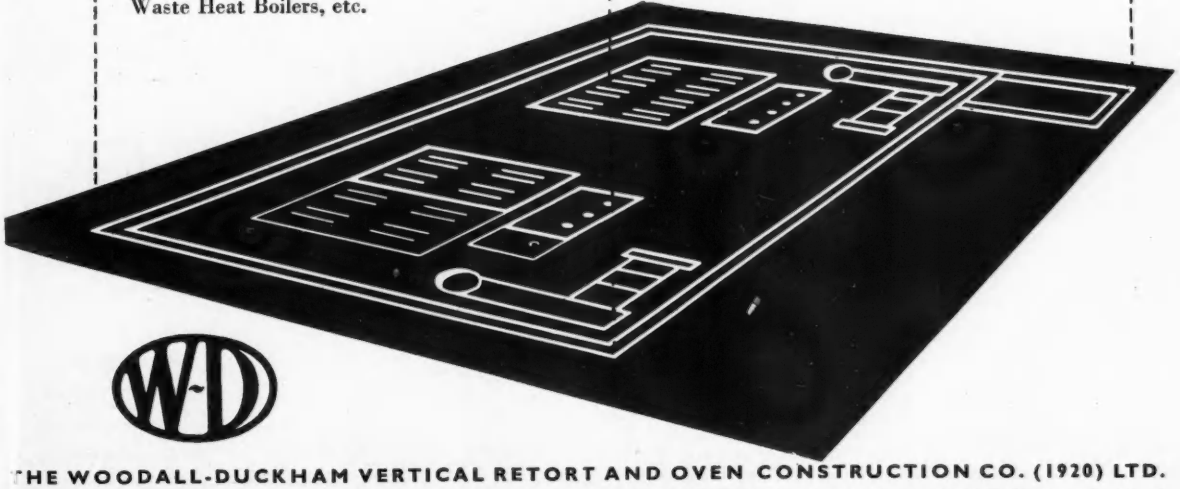

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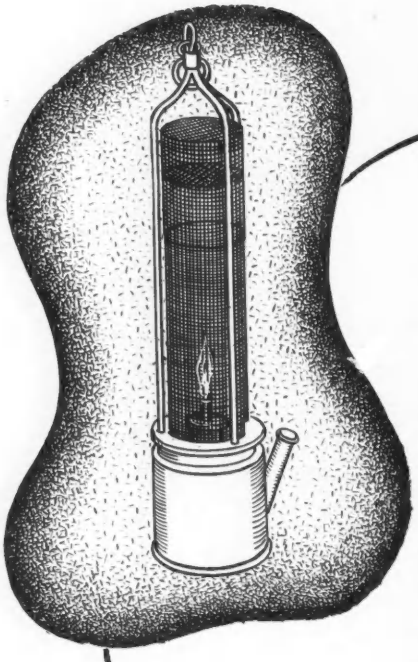

Sir Humphrey Davy

This famous native of Penzance devised the Miners' Safety lamp in 1815 as an outcome of his experiments in connection with noxious gases, which invention has provided the means of ensuring the safety of the many thousands of people engaged in the mining industry.

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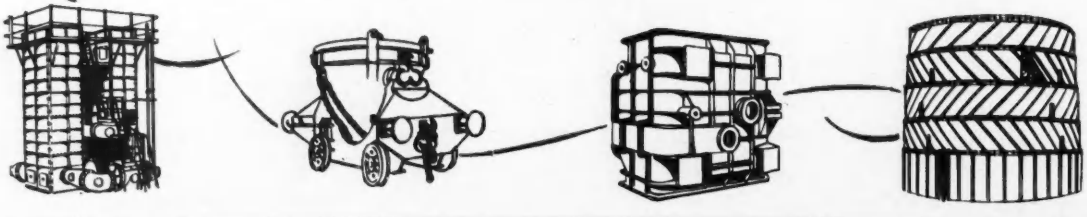

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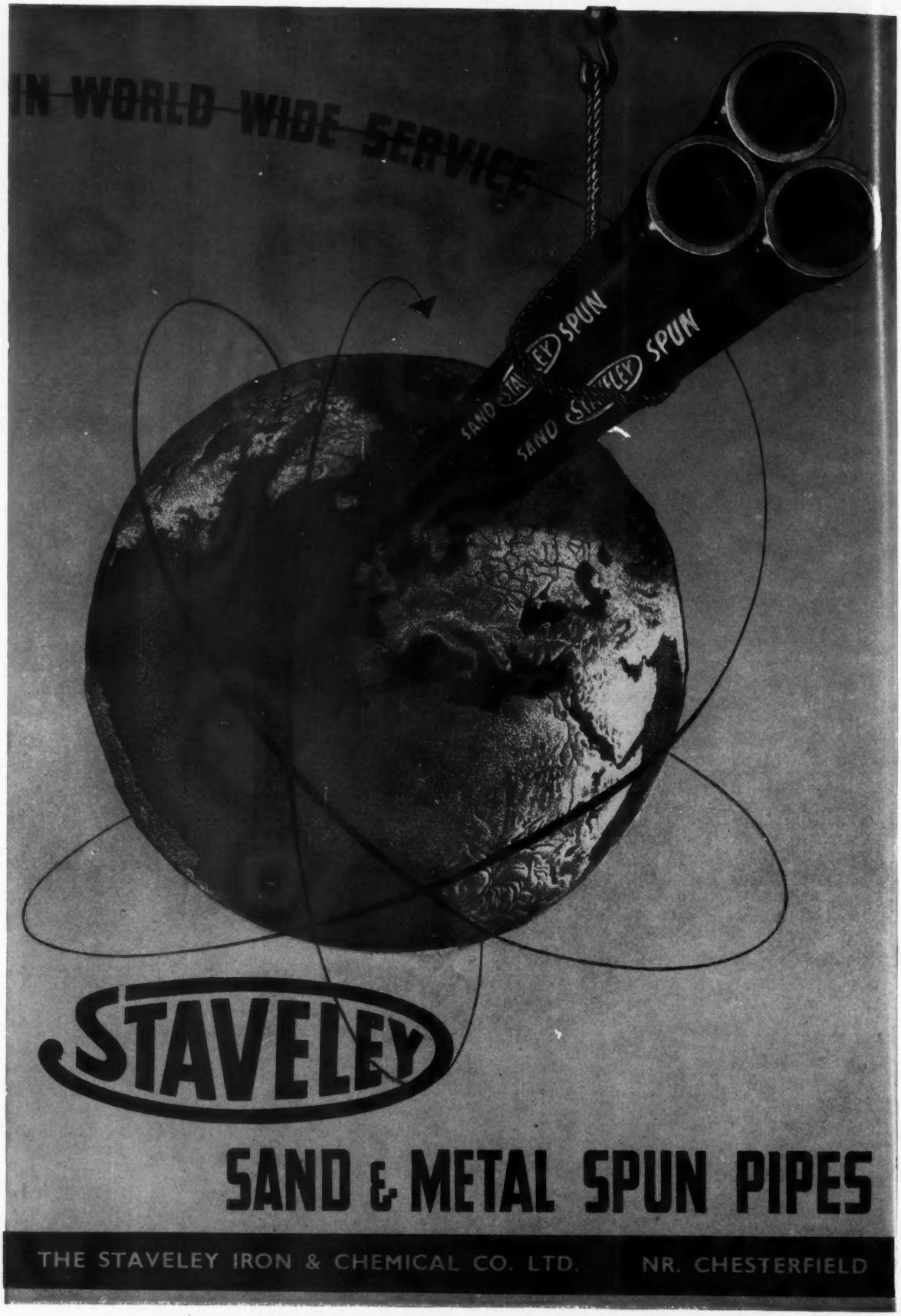
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BECKTON AND ITS ELECTRICITY SUPPLY

by

D. V. CANNON, M.I.E.E.
Electrical Engineer, Beckton
(North Thames Gas Board)

Just as Barking and Billingham are the giants of the electricity generation and chemical industries, so is Beckton a giant of the gas industry. The following is a description of Beckton's electricity supply and distribution problems.

UNLIKE its great companions, the construction of Beckton commenced in the 19th Century, in the 1870's in fact; no thought of electricity supply existed and the whole future problem of electrical power for the works was, in consequence, always to be one of conversion from some other medium together with additions, rather than one of original planning.

Electricity eventually came to Beckton in 1911 when a small D.C. generating plant driven by gas engines was installed to supply a newly built retort house, the first in Beckton to have electrically-operated stoking machines. This plant generated at the then standard voltage of 220 and distribution was by means of single core V.I.R. cables hung on porcelain insulators. In spite of the unsuitability of the motors and starters employed, the installation proved so effective that it was gradually extended piecemeal, until some 450 kW. of gas engine driven plant was in use.

After the end of the first world war, it was decided to install a reciprocating steam driven D.C. generating plant to meet the steadily rising demand, and some 550 kW. of generators were purchased.

In 1921, a water pumping project, the load of which could not be met by either of the above generating plants, was decided upon and a public supply from the Woolwich Borough Council Electricity Department was brought in. This was a great innovation since the supply was at 6.6 kV., three-phase, and the first transformer house was built to give a 440 volt supply to the new plant.

The year 1925 saw a further great expansion in demand due to the construction of a new coal unloading and conveying plant, and to meet this load, and at the same time permit the shutting down of the two old generating stations, a new generat-

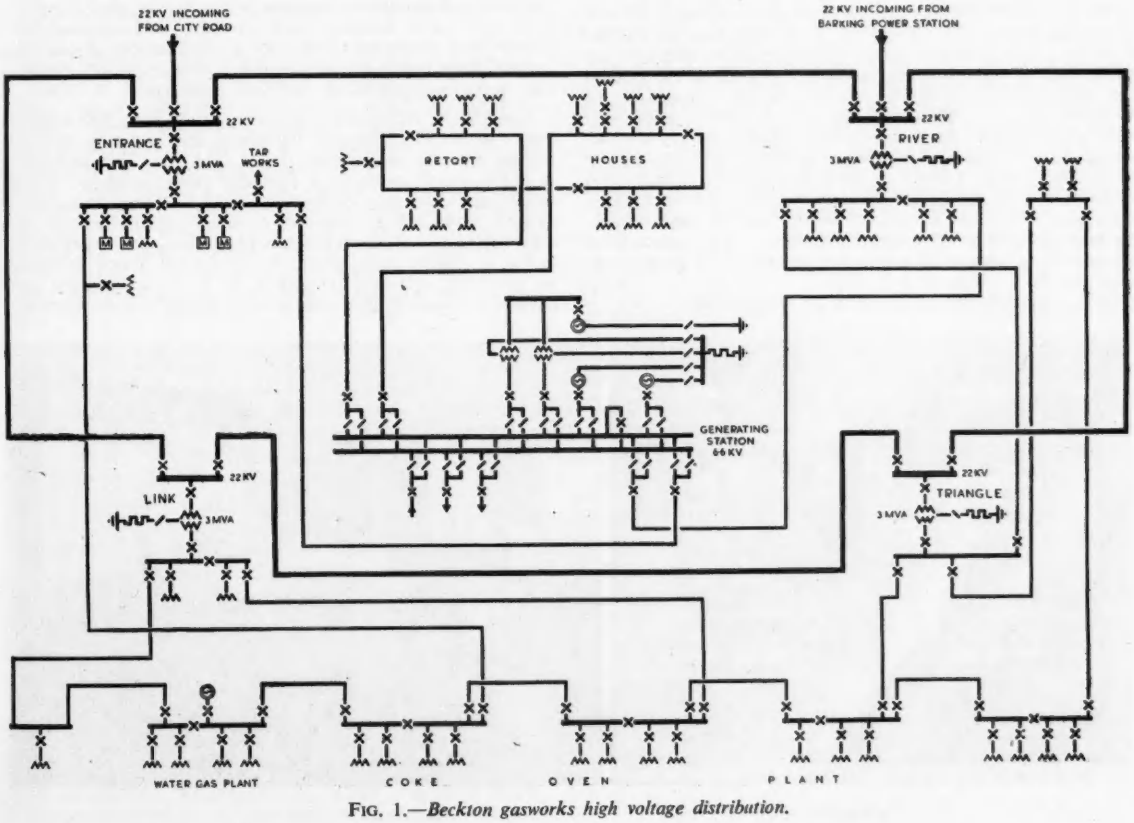

FIG. 1.—*Beckton gasworks high voltage distribution.*

FIG. 2.

FIG. 3.

ing station equipped with steam turbo-alternators was built. Two years later, this plant was extended, the installed capacity then amounting to nearly 5,000 kW. A 6.6 kV. distribution system was inaugurated at the same time.

The addition of coke ovens, further coal and coke handling plants, and the conversion of other steam and gas engine driven plant to electric drives, together with the development of new works processes, gradually absorbed both the generating and public supply capacity, so that it became evident even before the end of the second world war that a major reconstruction of the Beckton electricity system would have to be undertaken.

Surveys of post-war development in gas manufacture and modernisation of plant were already being made in 1944 and as a result of these it became evident that the prospective electrical load would far outstrip the capacity of the existing generating station, boiler capacity, and public supply, and in view of the cost and difficulty of securing quick delivery of new generating plant and boilers it was decided to plan on a grand scale for a new external supply which would be adequate for many years to come but which would not preclude the generation of electricity within the works whenever necessary or desirable. In 1947, therefore, negotiations were opened with what was then the County of London Electric Supply Co. for a bulk supply capable of meeting a maximum demand of from 10-12 MW. and as a result of these discussions it was decided to divert one of the 22 kV, feeders running between Barking generating station and City Road sub-station, the supply entering Beckton at two widely separated points. To connect these two points, an internal 22 kV. ring main was to be constructed, supplying four primary sub-stations to which the existing 6.6 kV. distribution system would be reconnected.

Contracts for the supply of the necessary equipment were placed in February, 1948, and the supply was finally switched on on November 9, 1950, when the work of transfer commenced. This work had to be carried out with great care as the new and old public supplies could not be paralleled, being 30° out of phase, and to ensure continuity in gas production no interruption of supply could be permitted. The major part of this work was completed by December 16, 1950, and the remaining changes some 12 weeks later. The supply system is now as shown on Fig. 1 and a detailed description follows.

The Supply System

The 22 kV switchgear is of the single compound filled bus-bar vertical isolation type rated at 350 M.V.A., 400 amperes, and is provided with solenoid closing (Fig. 2). Interconnection between sub-stations is by means of 0.2 sq. in., three-core paper insulated and screened, lead sheathed, and double wire armoured cable. By a combination of pilot and inverse time limit relays adequate protection of bus-bars and interconnecting cables has been achieved.

The 6.6 kV. switchgear is rated at 150 M.V.A., 400 amperes, and is of the single bus-bar horizontal draw-out type with bus section switches at strategic points (Fig. 3). This switchgear is either hand operated or provided with solenoid closing according to the duty performed. 6.6 kV. feeder protection is carried out by either directional or non-directional inverse time limit relays usually assembled in protection cubicles as shown in Fig. 4. Short circuit energy on the 6.6 kV. system is limited by operating sections from each of the four primary sub-stations as isolated units, the interconnecting circuits normally

FIG. 4.

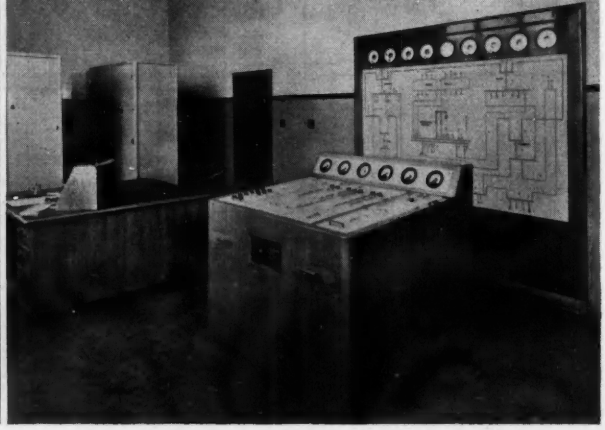

FIG. 5.

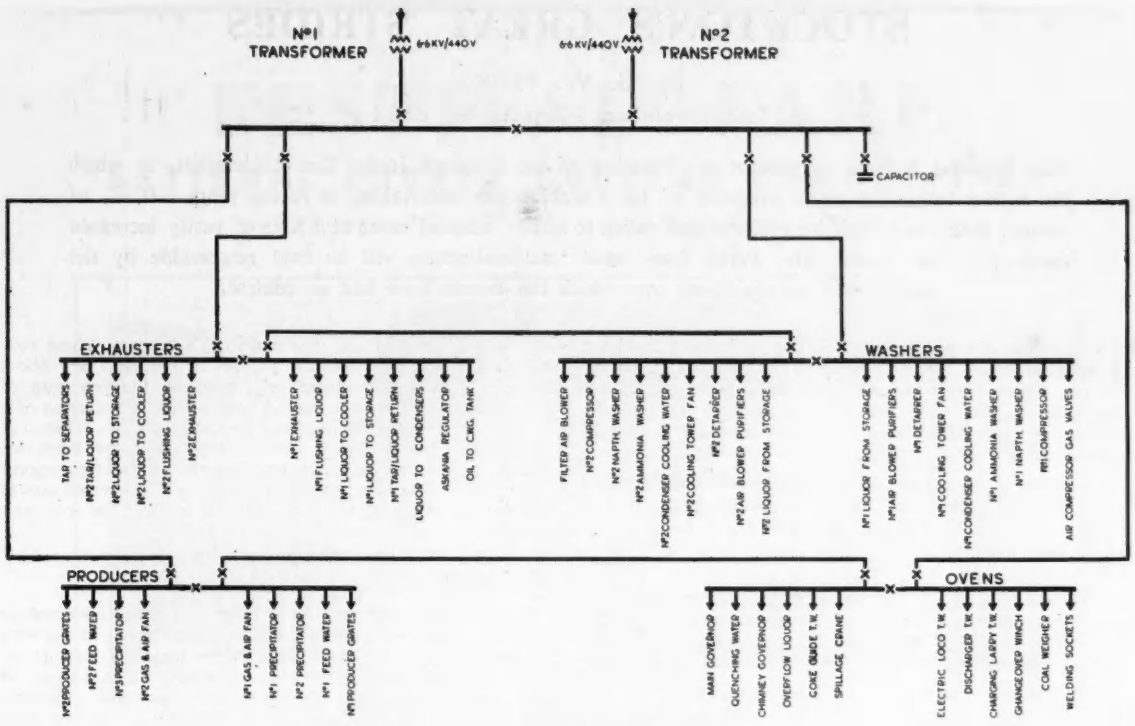

FIG. 6.—*Typical L.T. distribution system for a coke oven plant.*

remaining open. Earth faults are limited by a 10 ohm. resistance in the neutral connection of each of the main step-down transformers.

The main transformers, which are at present four in number, are located at the primary sub-stations, each of which is so designed that an additional unit can be added if and when required. These transformers, rated at 3 M.V.A., are of the natural oil-cooled type, having 8% impedance and provided with on-load top change gear giving +5 to −10% variation in primary voltage in 1¼% taps, the voltage on the 6.6 kV. side being held constant by means of a voltage regulator operating on the tap change motor. These transformers are delta connected on the 22 kV. windings and star on the lower voltage side, the neutral being brought out for earthing. An oil conservator, equipped with Bucholz relay in the feed pipe, is also fitted.

In addition to the usual precautions to prevent the spread of fire by means of segregation, barrier walls, etc., the four primary sub-stations are equipped with automatic CO_2 fire-fighting equipment which is set in operation by the fusing of special fusible links in the switch or transformer rooms. The operation of the CO_2 equipment gives a local audible alarm and remote indication and alarm in the control room.

The control room is equipped with supervisory control apparatus giving illuminated indication on a mimic diagram of the 'open' and 'closed' condition of all high voltage switchgear and neutral earth links. Remote control of the 22 kV. and some 6.6 kV. switchgear is gained from the control console shown in Fig. 5. Remote alarms of electrical tripping, operation of CO_2 equipment, Bucholz and supervisory failure are also given and the special telephone turret shown on the desk to the left of Fig. 5 gives immediate connection via the supervisory equipment to most of the principal sub-stations. Two of the apparatus cabinets are shown to the left of the photograph.

It is interesting to note that the mimic diagram is of the mosaic type containing 4,000 moulded squares which clip on to a metal framework. Re-arrangement of the diagram to allow for changed connections or additional switchgear is, therefore, a simple matter and the space occupied by the whole diagram, 7 ft. 5 in. by 7 ft. 2½ in., is remarkably small, considering that no fewer than 123 switches are recorded.

The control console is designed on the 'common equipment' system and can be made to represent and signal back to the operator the 'open' or 'closed' condition of all switches in any particular sub-station or group of sub-stations at will, and these conditions can then be compared with the pre-set mimic diagram record. The console can also give remote indications of primary sub-station load, voltage, and power factor by the turning of the appropriate meter selection key.

All the foregoing functions are gained by means of a maximum of three pairs of telephone lines between sub-stations and the control room.

A study of a typical transformer house serving a battery of coke ovens, shown in diagrammatic form in Fig. 6, will show that considerable care has been taken to secure continuity of supply, for not only are the 6.6 kV. and 440 volt bus-bars fitted with section switches, but transformers are duplicated and the L.T. switchrooms fed from a ring main. Where any particular drive is itself duplicated one unit is always supplied from one side of the L.T. section switch while the standby unit is fed from the other side (Fig. 7). The foregoing facilities not only give maximum freedom from breakdown but permit of electrical maintenance or alterations to be executed without interruption to gas production. Inverse time limit relays are invariably used for the protection of these L.T. ring mains, but the individual motor circuits usually employ ordinary magnetic overloads with H.R.C. fuses as back-up protection. Larger motors, such as those used for exhauster drives, employ thermal overload relays in place of magnetic protection.

To date, no major gas pumping has been carried out at Beckton by motor driven boosters, steam turbines being used exclusively, but a project now in hand will add 2,000 kVA. of synchronous induction motors to the system so that the present annual consumption of 20 mill. units will soon be greatly exceeded and it is anticipated that the present load factor of

(*Concluded on p. 181*)

STOCKTON'S GREAT STRIDES

By G. W. PERKS,
Stockton-on-Tees, Northern Gas Board

The following is from an address as President of the Northern Junior Gas Association, in which the author traces the rapid progress of the Stockton gas undertaking in recent years. It is, of course, unfortunate that the projects undertaken to satisfy demand come at a time of vastly increased costs—with the result, Mr. Perks fears, that 'nationalisation will be held responsible by the uninformed for conditions over which the boards have had no control.'

THE whole of my working life in the gas industry has been spent with the Stockton undertaking. Naturally, during this period many developments have taken place, but none more rapidly than during the years from 1939 to the present—indeed the tempo has quickened since the advent of nationalisation.

The output of gas from the Stockton works has increased from 647,744,370 cu.ft. for the year ended March, 1940, to 1,512,573,700 cu.ft. for the year ended March, 1951, or 133%, and the maximum day from 2,890,900 cu.ft. to 5,531,500 cu.ft., or 91%.

Extensions both to gas production and to purification plants have been necessary from time to time as the whole of the gas distributed in the area of supply had to be made at the works, no coke oven gas supply being available.

By 1946-47 the C.W.G. plant, originally installed about 1900 but modified at various times up to 1931, had become a base load plant during the winter period. It was therefore decided that a 2 mill. cu.ft. per diem hydraulically operated plant should be purchased and a contract for its supply and erection was placed with Power-Gas Corporation, Ltd. This plant was put to work in February, 1947. The Power Gas unit came into full production with the minimum of teething trouble and has since worked very successfully.

The decision to install the new water gas plant was, at that time, considered to be a short term policy, and in view of the limited life of the existing south bench of retorts, the arches of which were built, in 1921, it was felt that active consideration should be given to the building of additional coal carbonising plant. The congested nature of the works layout rendered it imperative that the type of plant to be adopted should be such that the maximum gas production per unit of space was attainable. The choice finally made was for continuous vertical retorts and a contract was made in July, 1947, with West's Gas Improvement Company, Ltd., for an installation comprising 32 50-in. retorts in settings of eight to give a minimum daily gas production of 2 mill. cu.ft. of 500 C.V. gas, the beds being heated by West's mechanical producers. The necessary plant for coal and coke handling and coke screening and prepared foundations for duplicate settings were included in the contract.

Purification of the vertical retort gas will be carried out in the older part of the works, but condensing, exhausting, detarring, and ammonia washing plant is being erected adjacent to the new site. Waste heat steam will be available for the operation of duplicate 100 kW alternators which will provide the electric energy required for the operation of a 4 mill. plant.

With the advent of nationalisation, site work on the new retort house had not commenced, and the board decided to install a second 2 mill. unit so that erection could proceed concurrently with the original scheme. Work is proceeding steadily, but some time must elapse before the ultimate figure of approximately 9 mill. cu.ft. per day production at the Stockton works is realised. It is anticipated that part of the gas from the increased capacity will be available for use outside the Stockton division.

The existing holder storage capacity of approximately 1¼ mill. is very inadequate, representing as it does only 32% or less than 8 hours of our maximum day's output. These conditions and the fact that the present two holders are about 50 and 70 years old respectively, rendered the provision of additional storage imperative. A contract for the erection of a 3 mill. spiral guided holder was placed in March, 1950, and the laying of foundations is well in hand. However, these two ancient monuments of the vertical column guided type appear to be good for service for some time yet—a fact which speaks well for the quality of material and workmanship put into their fabrication.

Distribution

It is fortunate for us, and a credit to those concerned so many years ago, that the distribution system trunk mains were planned on generous lines; even so, the increased outputs experienced could hardly have been predicted at that time. It was apparent during the latter part of the war that consideration must be given to augmenting pressures in outlying parts of our area of supply. This was particularly evident in the areas adjacent to the Durham Road, where extensive housing schemes were projected, and the Billingham-Haverton Hill district, where similar conditions prevailed, coupled with considerable industrial development.

The merits of the laying of low pressure trunk mains or the introduction of a high pressure system were examined and choice was given to the latter.

The scheme comprised the installation at the works of steam-driven reciprocating compressors in duplicate, each 100,000 cu.ft. per hour capacity at 20 lb. per sq. in. and the laying of:—

(1) 4,000 yd. of 8 in. main along Durham Road.

(2) 5,200 yd. of 12 in. main along Portrack and Haverton Hill Roads.

Section (1) was the portion first laid, provision being made for the fixing of three governors *en route* at strategic points. The main was first put to work in 1946 and its beneficial effects were immediately felt. Those parts of the district affected, which had suffered from inadequate pressures, particularly at Sunday cooking time, were assured of satisfactory supplies at all times, with a corresponding reduction in complaints received and requiring attention.

Section (2) was completed in 1948 with results equally satisfactory. In this case four governors were installed at points where industrial demand is most concentrated and likely to be extended. The completed scheme has had the effect of filling a bowl where indifferent pressures at peak loads were prevalent and stabilising conditions generally. The high pressure mains at offpeak periods function as low pressure feeders. Although the improvements have served the purpose for which they were designed, there are already signs that further modifications will in time become desirable. It is felt, however, that the utilisation of interlink schemes between units and another adjacent division, and the materialisation of a coke oven gas supply, will go far towards taking care of these problems.

An all-welded high pressure holder of 50,000 cu.ft. capacity at 100 lb. per sq. in. has also been erected at Haverton Hill, which should stabilise conditions in an area where the good effects of the high pressure mains system are not so pronounced.

FESTIVAL FARE

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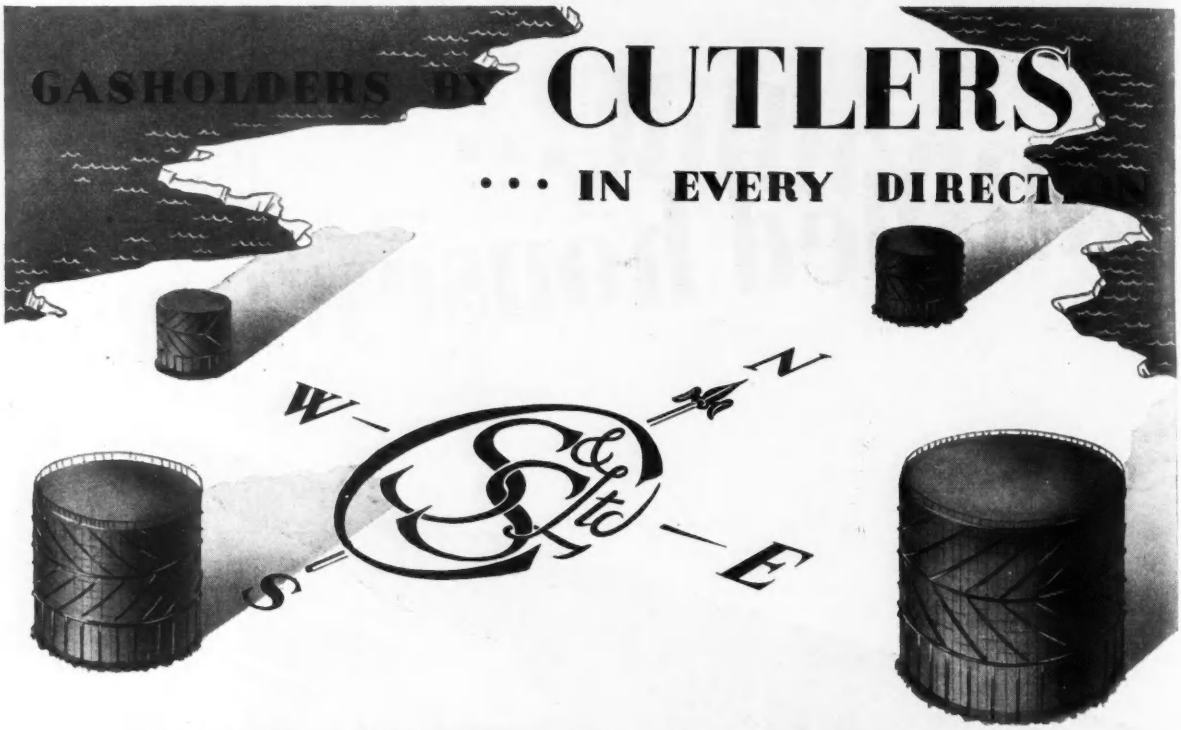

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A most important development has taken place recently. A supply of purified coke oven gas from Fishburn Colliery will become available in the course of the next few years, work on the erection of the ovens having already commenced. It will therefore be necessary to lay 19,135 yds. of 18-in. dia. high pressure main from Fishburn via Sedgefield and Durham Road to join up with the Stockton-Middlesbrough interlink. Villages and townships *en route*, at present without a gas supply, can be provided for if so desired.

On completion of these various schemes a variety of operations will be possible, as follows, permitting the transference of gas:—

(1) Between the Stockton and Middlesbrough divisions in either direction using existing holders or the new Portrack Lane holder.

(2) From the Stockton works to the new holder either from existing holders or direct from 'make.'

(3) From the new holder to existing holders utilising pressure differential or boosters.

(4) From the new holder direct to town via an existing 23-in. dia. booster main or by additional connections to trunk mains in the near vicinity of Portrack.

In addition to the above, surplus gas from the Stockton works will be put into the interlink main simultaneously with that coming from Fishburn. Advantage will also be taken of providing an additional outlet from the works to the town of gas under either holder or boosted pressure.

It is evident that a physical link between the two units of the Stockton division became a desirable feature of planning for the future. Consequently, a project is being implemented to utilise the existing 12-in. high pressure main, which terminates on the outskirts of Haverton Hill, and converting to high pressure the existing 12-in. and 10-in. low pressure mains, which run from this point to the extremity of our distribution system at Cowpen Bewley village. It will also be necessary to connect between the latter and Greatham situated at the extremity of the Hartlepool unit system, where a 12-in. boosted pressure main running direct from the Hartlepool works already exists. Direct communication between the works of the two units will thus be established.

Provision for the supply to those districts now fed by the low pressure mains which are to be converted to high pressure will be made by the introduction of governors and/or additional low pressure mains.

When these various projects reach fruition a practical measure of integration of gas supplies on Tees-side will have been accomplished—something one could hardly imagine under the conditions prevailing prior to nationalisation.

The Solid Smokeless Fuels Federation has introduced a mobile showroom specially designed to demonstrate, particularly to country dwellers, the latest types of domestic solid smokeless fuel appliances. It allows eight typical appliances, covering all the heat services in the home, to be on view. They include open fires and heating stoves, cookers, hot-water boilers, some of them multiple-duty appliances which provide heating plus hot water or cooking plus hot water, and a combination grate for all three services. An appliance of each type can be shown alight. The Federation has realised that in the countryside there is a need for more efficient heat services in the home which in many cases can only be met with solid-fuel appliances. The mobile showroom will visit country shows and market towns.

BECKTON AND ITS ELECTRICITY SUPPLY— (*Concluded from p. 175*)

50% will be still further improved. The present overall consumption of 1 kWh. per 1,000 cu.ft. of gas made is also likely to be considerably exceeded.

It will be observed from Fig. 1, that a supply is given to the adjacent Tar and Ammonia products Works where a 6.6 kV. distribution system is in course of development. This scheme will entail the construction of some four transformer houses and a generating station, the latter to be fitted with back pressure turbo-alternators which will run in parallel with the gas-works system, so that any exportable surplus of electricity can be absorbed.

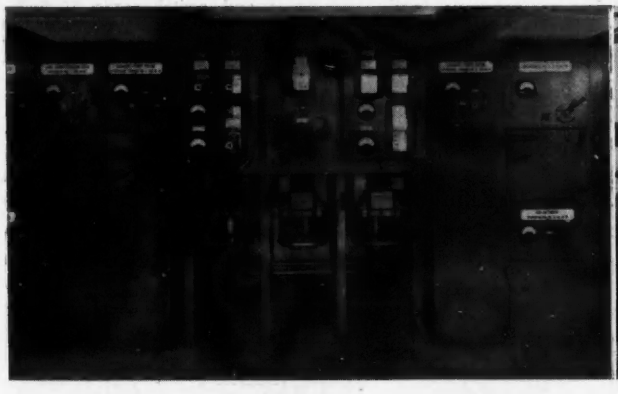


FIG. 7.

FIG. 8.

The installation of the many thousands of yards of high voltage and other cables for the distribution system just described has in itself been a major problem. Except for a few special cases, no cable has been placed in the ground owing to the risk of corrosion and because of the many obstructions caused by the existence of innumerable gas, tar, liquor, water, and other services, and use has, therefore, been made of an existing overhead railway and gantry supports designed to carry new cable, steam and other services. Fig. 8 shows one such cable run.

As far as possible, cables which are standby one to the other have been taken by different routes so as to minimise risk, and adequate access has been provided so that periodic inspection and serving can be carried out. Special care has been taken in the support of all joint boxes and expansion has been allowed for in the run of the cable. The 22 kV. cables are also fitted with sun-shields.

Although the system described has been designed to meet onerous operating conditions and an exacting demand for reliability, it must not be thought that it is incapable of modification. At all stages in design and construction, allowance has been made for foreseen extensions, and, furthermore, the layout is such that future unknown loads can be met by suitable modifications which can be carried out with a minimum of interference with the continuity of supply.

Messrs. Mackness and Shipley acted as Consulting Engineers to the entire project.

TRADE NEWS

Butterley

Ad Rem No. 2 maintains the interest of No. 1. It contains interesting articles dealing with Butterley in 1886, and an article on the farm which is owned by the Company. 'Meet Our Customers' No. 2 brings the reader in touch with Automotive Products Co., Ltd., and gives him an interesting insight into their works. The photographs and drawings, jokes and puzzles are all well worth reading.—*The Butterley Co., Ltd., 20, Ashley Place, London, S.W.1.*

Heather Filters

We have received information of the Heather multi-brush air filter system, for which several advantages are claimed. The filter is designed to enable a combination of several units to be built up and provide the filter area necessary for a given air flow. The material used for the filter brushes is selected to ensure maximum efficiency and to withstand the varying humidity and other conditions of dust-laden air. Among the advantages is the ease of cleaning.—*Heather Filters, Ltd., 28, St. James' Place, London, S.W.1.*

Hopkinsons

Booklet 5100 describes the development of the valve since 230 B.C., but, of course, lays particular stress on the last 108 years. It was then that Joseph Hopkinson commenced business as a manufacturer of engineering fittings and particularly of steam engine and boiler accessories. The book is of great interest, and is well-produced. Old prints, drawings and photographs maintain one's enthusiasm throughout.—*Hopkinsons, Ltd., Huddersfield, Yorks.*

Ashworth & Parker

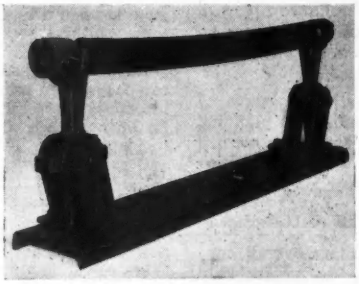
'Fifty Years of Progress' has been produced to mark a half century. Their address, Riverside Works, is not merely a whimsical attempt to discount the prosaic appearance of a factory. They illustrate this with four photographs of beautiful scenery within a mile of the works. The story is told well and the 'tween wars trials and tribulations brushed over as though taken in the stride.—*Ashworth and Parker, Ltd., Riverside Works, Bury.*

Coleman Wallwork Co.

This new company is the result of combining the Coleman Foundry Equipment Co. and Stone-Wallwork, Ltd. Already having the Stone-Wallwork operating within the framework of their organisation, the J. Stone Group of Companies recently purchased the Coleman Foundry and have amalgamated them with the intention of giving the fullest support to the foundry industry. Offices, workshops, technical and research departments will be centred at *Windsor Works, Stotfold, Beds.*, and area offices will be opened at *157, Victoria Street, London, S.W.1,* and *12, Bulldale Street, Glasgow, W.4.*

Richard Sutcliffe

The photograph shows the hammock idler, which is a type of belt support developed to improve the life of conveyor belting and designed to produce a unit which has a greater efficiency than the standard three or five pulley type of idlers. It may be used anywhere along a run of conveyor installed underground or in industry. The design enables the belt to adopt its natural curve when loaded with material. The trough is dependent upon the quantity carried and can be adjusted for materials with different specific gravities. The adjusting trough decreases the spillage and the design is such that any tendency of the load to be on one side of the belt is quickly corrected.



The rubber tube roller is designed to stand up to abrasive material and continual flexing due to variation in load. Although all impact due to heavy loads is easily absorbed, the hammock idler is not intended for heavy duty at loading and transfer points. The design leaves a clear space beneath the roller to allow for cleaning and to prevent building up of material. In case of accident or damage to the idler the likelihood of belt damage is lessened and replacement of the idler is easy. The hammock idler is suitable for all belt widths and may be fitted to existing installations.—*Richard Sutcliffe, Ltd., Universal Works, Horbury, Wakefield.*

Ductube Company

A further demonstration was given recently of the Ductube method of moulding ducts in concrete which was described in the *Journal* of February 8, 1950 (p. 329). Ductube is pneumatic rubber tubing specially made for forming ducts in concrete structures, constructed with a diagonally braided fabric core which, on inflation, ensures a minimum expansion in diameter and a considerable contraction in length. On deflation there is a simultaneous two-way movement which causes the tube to detach itself from the surrounding concrete; this is further assisted by a twisting of the tube created by one set of the diagonal fibres in the fabric core having a slightly greater tension.

The method is of particular interest to the main and service laying departments of gas undertakings. The main demonstration was a suggested method of forming four-way 4 in. ducts for gas, electrical, or drainage purposes in concrete. A model house, partly constructed, showed ducts in concrete floor, walls and roof, and house drainage connections demonstrated the method of construction and the smoothness of the bore, which was consistent throughout the lengths.

Ductube can be used in any type of concrete, aerated, reinforced, vibrated, or plain, for forming straight runs or curves hitherto virtually impossible except by leaving metal or fibre cores in position. The demonstration included a display of the various fittings, valves, tools, etc., employed in the Ductube process. *Ductube Co., Ltd., Regent House, 235-241, Regent Street, W.1.*

Foster Transformers

Rapidly increasing demand for Foster transformers, voltage regulators, specialised test equipment and H.I. switchgear, has brought about a situation where it has become impossible to deal with the greatly increased volume of orders at the Wimbledon factory of Foster Transformers & Switchgear Ltd. (a company in the Lancashire Dynamo group). To cope with this situation, arrangements have been made to transfer production of Foster Switchgear to Crypton Equipment Ltd., another factory in the Lancashire Dynamo Organisation. The Crypton factory at Bridgwater, newly built, on a seven acre site, can provide the increased production space which these developments demand and can also offer scope for factory extensions.

The design and production of Foster switchgear at Bridgwater will be carried on by the same experienced staff and key productive labour as previously employed at the Foster Wimbledon factory, to ensure that existing standards of quality and engineering service are fully maintained. New equipment and tools are being installed which, together with the increased space available, will enable a higher production to be built up, thus ensuring the best possible delivery service to all customers for Foster H. I. switchgear and switchboards. *Foster Transformers & Switchgear Ltd., and Crypton Equipment Ltd., Bridgwater, Somerset.*

Trade Publications

We acknowledge with thanks the following:

Broom & Wade Ltd., News Bulletin, dealing with type SV 606—500 cu. ft. model sleeve-valve compressor and their recent activities overseas.

Richard Klinger Ltd., for their book of jointings, dealing comprehensively with all the problems.

Northern Aluminium Co., for the interesting Application Record on the subject of aluminium bodies for large tipping vehicles.

The Pyrene Co., for the first issue of *The Bonderizer* describing this rust resisting application.

W. H. A. Robertson & Co., for their guide to threading dies, which has been designed as a reference book.

W. G. Bagnall Ltd., for the 56 page book of locomotives, with illustrations, photographs, diagrams, dimensions and capacities.

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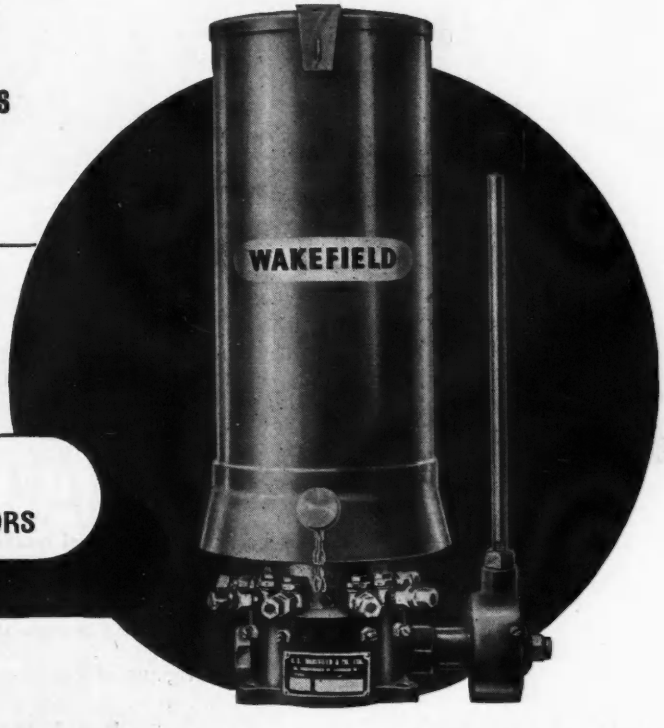

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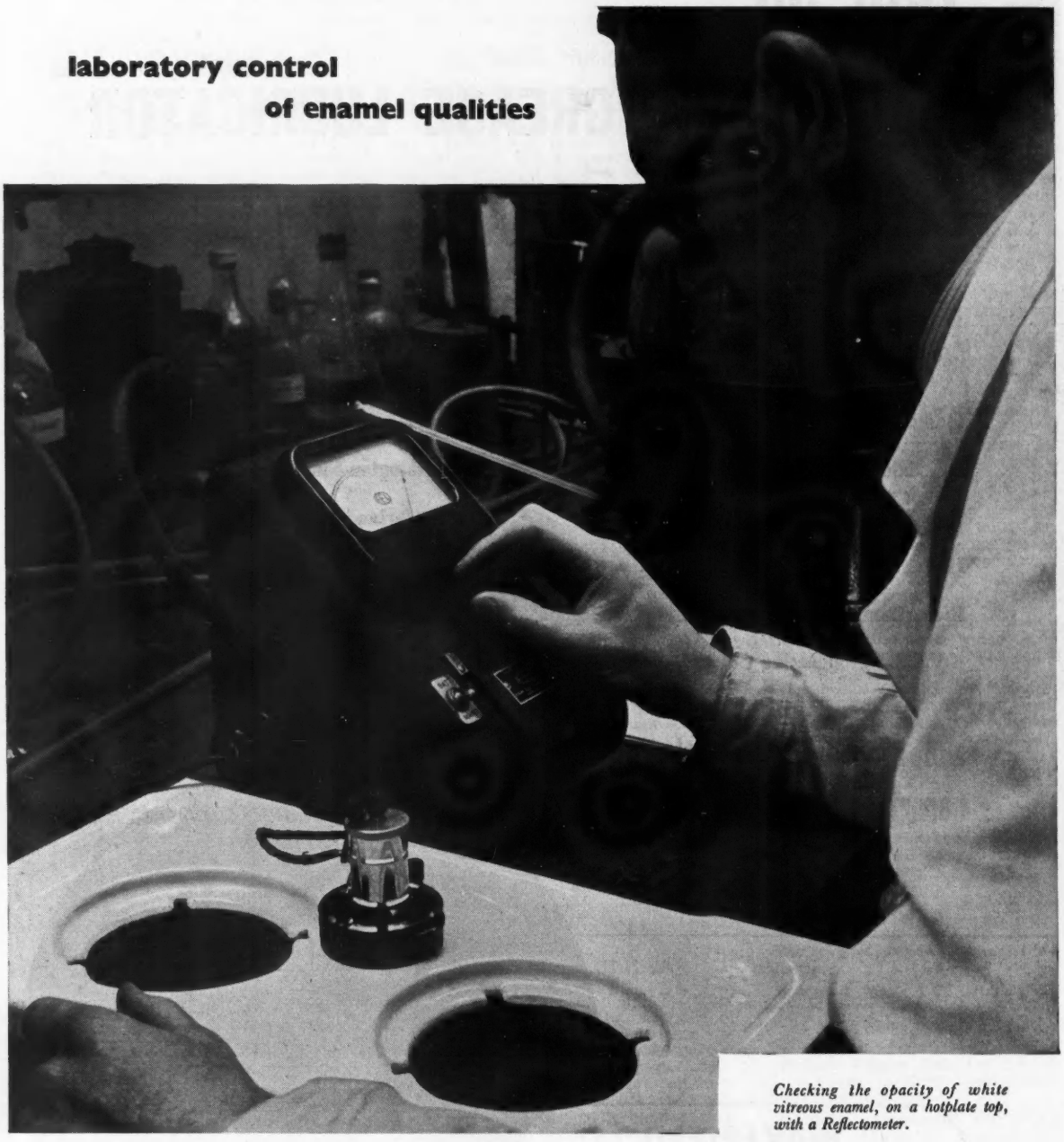

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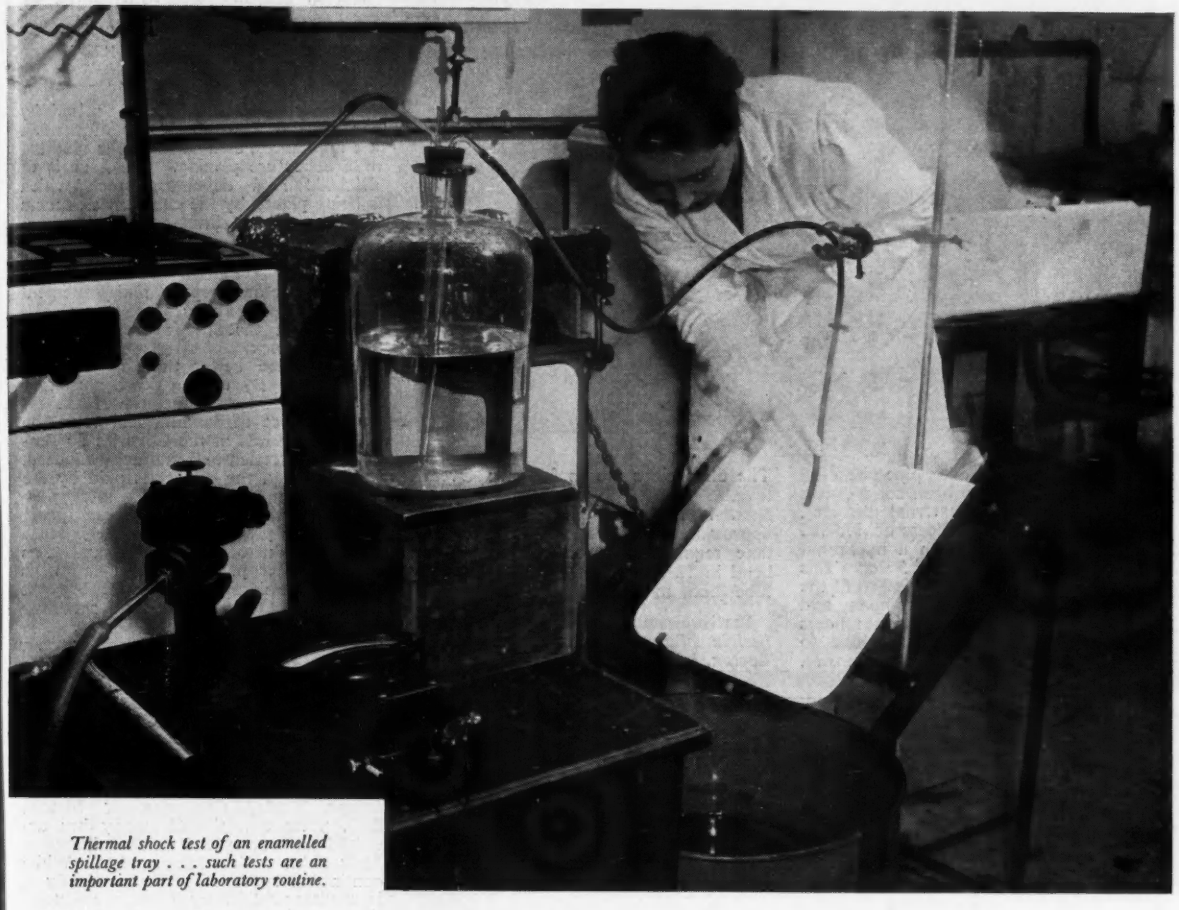
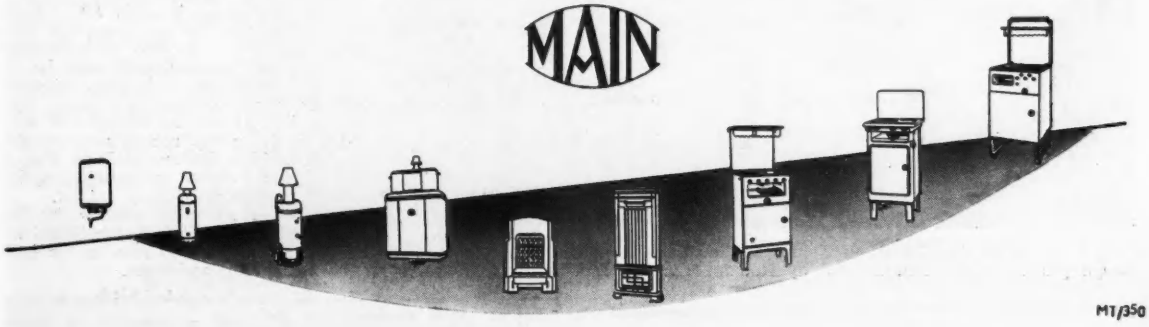


Thermal shock test of an enamelled spillage tray . . . such tests are an important part of laboratory routine.

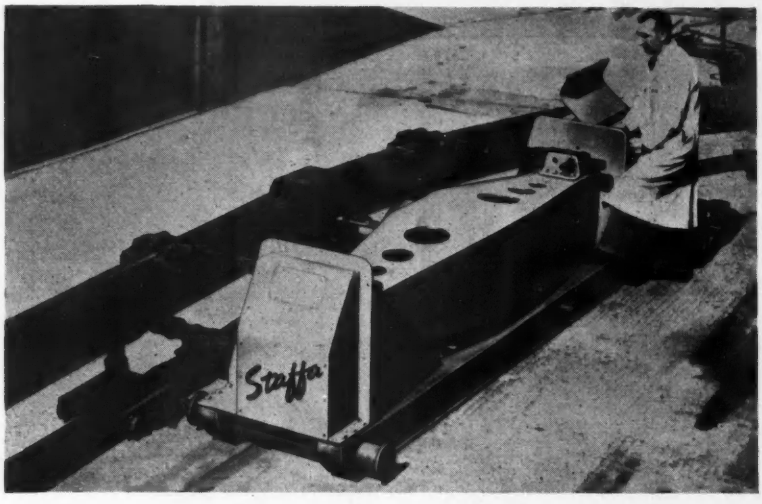
main GAS APPLIANCES

COOKERS • SPACE HEATERS • WATER HEATERS



M1/350

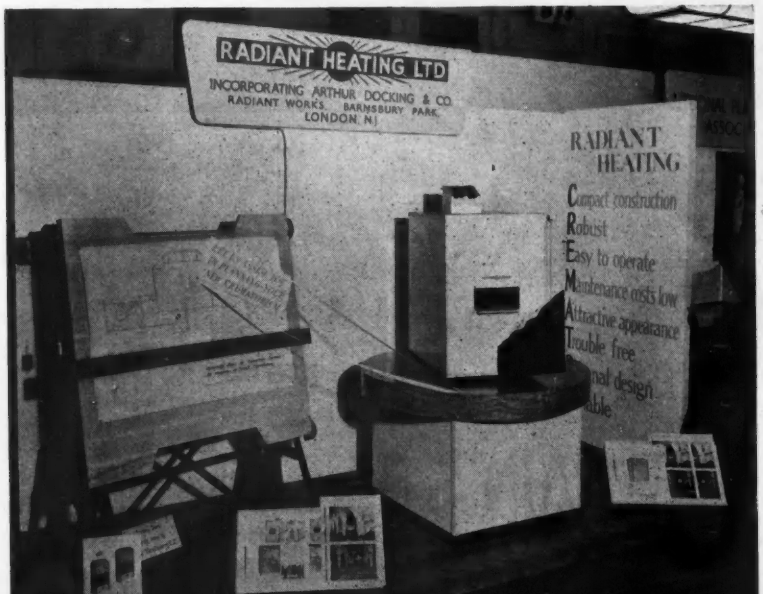
Chamberlain Industries



The 12 in. hydraulic pipe bending machine is designed to bend solid drawn steel pipe of 12.75 in. external diameter, with maximum wall thickness of .375 in., bending centres 8 ft., with a maximum angle of bend per stroke of 5 deg. This machine was originally designed to fit the requirements of a large oil company and its compact and narrow design renders it suitable for the bending of tube to large 'sweeps' of about 25 ft. *in situ*. The dimensions are as follows: Overall length, 13 ft. 2 in.; overall width 3 ft. 4 in.; overall height, 3 ft. 2 in.; approximate nett weight, 2 tons 9 cwt.; time required to produce one 90 deg. bend in 12 in. I.D. x 12¾ in. O.D. steel tube (floor to floor), 1 hour.

Particulars are available from: *Chamberlain Industries Ltd., Staffa Rd., Leyton, London, E.10.*

Radiant Heating



This exhibit at the Cremation Conference incorporated a model of the modern design gas cremator manufactured by Radiant Heating, Ltd.

COMPANY NEWS

CAPE TOWN

Profit 1950 £21,439 (£23,046). To ordinary dividend, announced June 29, 6% (same), provisions, etc., £15,682 (£16,569), forward £7,460 (£7,786).

PARKINSON AND COWAN

Further capital is being raised by Parkinson & Cowan, makers of meters, gas appliances, etc., through the medium of a debenture placing. The issue is of £125,000 3½% debenture stock which is being placed by the company's brokers with institutional investors.

IMPERIAL CONTINENTAL

The directors' report and statement of accounts for the year to March 31, 1951, states that the aggregate results of the Association's gas interests in Belgium were better than in the previous year. By closing down a part of the works and with the aid of the increasing price of metallurgical coke, the high rate of loss at the Cokeries du Brabant was arrested and gradually reduced. Consequently, the dividends paid by the Belgian companies as a whole were covered by a bigger margin of profit than in the previous year. The balance to the credit of the profit and loss account, after providing for taxation, is £271,478. Adding the balance brought forward of £174,945, the total available for appropriation is £446,423. The directors recommend the payment of an ordinary dividend of 9%, less income tax, leaving a balance to be carried forward of £181,823.

METERS, LTD.

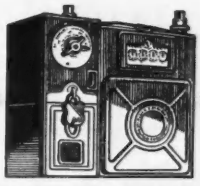
In his statement issued with the 54th annual report and accounts, Mr. Joseph Morley, Chairman of Meters, Ltd., notes that the Company has acquired a substantial shareholding in Metropolitan Gas Meters, Ltd. While continuing to function independently it is envisaged that by mutual co-operation, particularly in development and research, many advantages will accrue to both Companies. With the same object in mind the Board has lately entered into an agreement with George Wilson Gas Meters, Ltd. This link-up between the three Companies will, he is certain, prove beneficial to all. Meters (Scotland), Ltd., was formed as a wholly owned subsidiary, with a factory at Glasgow, and came into operation last July. Trading profit of the group showed a satisfactory increase of £12,152, but income tax and profits tax took a larger figure, and the resultant net profit was up only by £2,726. After providing for the preference dividend the final dividend is again 6%, making 10% (less tax) for the year, and after the transfer of £16,500 to investment reserve the carry-forward will be increased by £2,504. The value of stocks in the parent company's balance sheet is up by £91,300, an increase of 60%, and in the group accounts by roughly £90,000. This increase reflects that in addition to higher prices the physical volume of stock is also greater. To finance the situation created by the penal effects of taxation, the Board has found is necessary to turn to the bank for temporary assistance.

MOMENTOUS *Measures*

No. 3. A STATISTICAL MEASURE

Said William First, the Conqueror,
to his Amanuensis :
"Get busy now and call the roll,
I want a Census."
O.K. Oh King! I'll start right now,
You'll get a Domesday Book - and how!"

The Domesday Book, a valuation survey of England wisely conceived, admirably planned and perfectly produced, is - like the A. & M. Gas Meter - a masterpiece of workmanship. But the A. & M. Meter counts only one thing, the cubic feet of Gas you sell, and its accuracy can be depended upon at all times.



THE "A & M" METER

A MODERN MEASURE for the Gas Industry

ALDER & MACKAY LTD.
New Grange Works, Edinburgh
Bradford, Manchester, London, Belfast & Cork

A GREAT SUCCESS IN

Small kitchens and flats

The

Dainty

MINOR

This efficient little cooker of large capacity is made especially for small kitchens and flats.

Its cast iron construction ensures durability and low maintenance cost.

For hire purchase or for simple hire the Dainty Minor is ideal.

Approved and adopted by leading gas boards.

R. RUSSELL & SONS LTD., DERBY

Agents for Scotland and Northern Ireland
JAMES R. THOMSON & CO., LTD., 10, Blythswood Street, Glasgow, C 2

Modern Gas Production Needs This

The modern trend is to effect economy in gas production and operation by creating large productive units with wide distribution networks. Large schemes can operate efficiently only by means of centralised information and control.

Evershed instrumentation meets this need. Its many systems of remote indication and control—each one designed for a specific purpose—enable the gas engineer to exercise adequate supervision of an undertaking by collecting and co-ordinating all relevant data at one central point.

Examples of the advantages of Evershed instrumentation are:

- **Remote Indication of Gas Holder Volume**
- **Indication at the producing plant of pressure at local distribution governors in high and medium pressure mains.**

Ask us for Publication G. J. 23.

EVERSHED CENTRALISED INFORMATION AND CONTROL FOR **GAS** UNDERTAKINGS

EVERSHED & VIGNOLES LIMITED
ACTON LANE WORKS: CHISWICK · LONDON · W4
Phone: Chiswick 3670. Grams, Megger, Chisk, London. Cables: Megger, London

6/20B

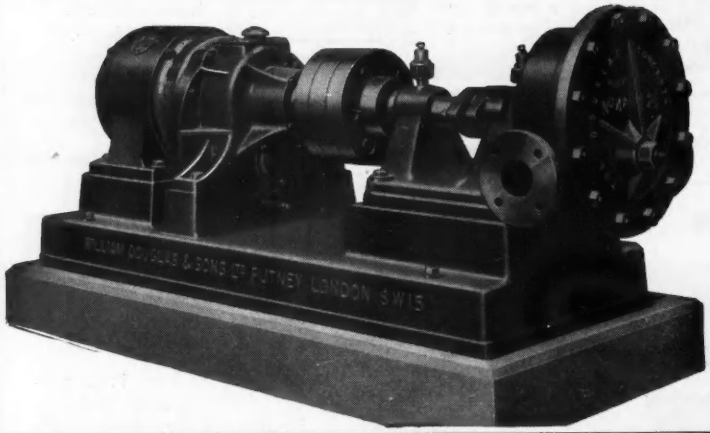
INDUSTRIAL RUBBER HOSE

CENTRAL MANFG., & TRADING CO. (DUDLEY) LTD.
OLD HILL STAFFS.
PHONE: CRADLEY HEATH 69181 (5 LINES).
"EVERYTHING IN ASBESTOS."

SPECIALISTS in ERECTION, DISMANTLING, ETC.,
GAS PLANT, GASHOLDERS, PURIFIERS,
FACTORY BUILDINGS, SHEETING, GLAZING.
W.D. (SHEETERS) LTD.
BARCLAYS BANK CHAMBERS, OWEN STREET, TIPTON
Telephone: TIPTON 1958. STAFFS.

CRANE
LTD

Foliac
GRAPHITE PRODUCTS LTD.
LONDON, S.W.11.



"THE DOUGLAS PUMP"
STEAM HEATED FOR TARS.

GOOD SUCTION
SLOW SPEED

WILLIAM DOUGLAS & SONS LTD.,
PUTNEY - - LONDON, S.W.15.

OXIDE

DUTCH AND DANISH BOG ORE
SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright.
Highest prices paid for Spent Oxide.

Send your enquiries to
GAS PURIFICATION & CHEMICAL COMPANY LIMITED
ESTABLISHED 1873
PALMERSTON HOUSE, OLD BROAD STREET, LONDON, E.C.2.
Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

REPAIRS

FOR PUBLIC LIGHTING
CLOCK CONTROLLER REPAIRS.
(A.I.D. approved)
BRIGHT, SON & CO.
(CLERKENWELL) LTD.
SUTTON WORKS, ARLINGTON AVENUE, ISLINGTON, N.1
Canonbury 2049 Brifulson, Nordo, London.

"KLEENOFF"
THE COOKER CLEANER
Tins for Sale to Consumers. In Bulk for Works Use

OXIDE OF IRON

BALE & CHURCH, LTD.
7, CROMPTON WAY, MANOR ROYAL, CRAWLEY, SUSSEX.
Telephone CRAWLEY 1212-3. Telegrams: "Balefire, Crawley."

THE BRITISH GAS PURIFYING MATERIALS CO., LTD.
NATURAL BRITISH.
DUTCH BOG ORE.
SPENT OXIDE.
LONDON ROAD, LEICESTER.
Telegrams: "BRIPURIMAT"
Telephone: 59086

FIRE!
WHERE'S YOUR
NU-SWIFT?
The World's Fastest Fire Extinguishers
— for every Fire Risk
Pressure-operated by sealed CO_2 Charges
NU-SWIFT LTD. • ELLAND • YORKS
In Every Ship of the Royal Navy

PUBLICATIONS

GAS ACCOUNT CALCULATORS
SUPPLIED either by Price per Therm or Thousand, for any specified Calorific Value, in book form, office charts, or pocket charts for Meter Inspectors, printed in clear type. Write for particulars to F. H. WAKELIN, LTD., Calculator Specialists, 354, WHEELER STREET, BIRMINGHAM.
'Phone: Northern 0989. 'Grams: Reckoners, B'ham.

PUBLISHERS' NOTICE

The "Gas Journal" is published every Wednesday, price 1/- ; by post 1/2d.

Subscription Rates : Home and Empire :- 52/- per annum ; Foreign :- 60/- per annum. (Both payable in advance.) A copy of the "Gas Journal" Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements : All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements : Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep x 7" wide ; block screen 120.

BUSINESS MANAGER : S. T. CULLEN

MIDLANDS OFFICE : 10, Union Street, Birmingham.

NORTHERN MANAGER : W. Q. Foster, 33, St. Helens Road, Harrogate. 'Phone : Harrogate 84291.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone : CENtral 2236-7. Telegrams : Gasking, Fleet, London.

PATENTS

KINGS PATENT AGENCY, LTD.

(Director, B. T. King, A.I.M.E., Patent Agent)
Advice, Handbook, and Consultations free. 146a, Queen Victoria Street, London, E.C.4. Phone : City 6161.

CONTRACTS OPEN

WALES GAS BOARD

BLACKWOOD & DISTRICT UNDERTAKING.

PAINTING CONTRACT.

TENDERS are invited for the painting of one Gasholder at Blackwood, Mon.

Specification can be obtained upon application to the undersigned.

Tenders should be delivered not later than August 9, 1951.

S. L. FILER, M. Inst. Gas E., M. Inst. F.,
Engineer, Manager & Secretary.

Blackwood & District Undertaking,
Gas Offices,
Poplar Road,
Tredegar, Mon.

APPOINTMENTS VACANT

EAST MIDLANDS GAS BOARD

NOTTS. & DERBY DIVISION.

NOTTINGHAM UNDERTAKING.

MECHANICAL MAINTENANCE FOREMAN.

APPLICATIONS are invited from suitably qualified men for the position of MECHANICAL MAINTENANCE FITTING SHOP FOREMAN at the Basford Works of the Nottingham Undertaking.

Applicants must be thoroughly competent to supervise the engineering maintenance of all types of plant employed in gas manufacture and should preferably have served an apprenticeship and gained works and erection experience with a firm specialising in mechanical plant for the gas industry.

The person appointed will be required to undertake the supervision and allocation of duties of all men employed on maintenance work and will be directly responsible to the Mechanical & Electrical Superintendent of the Undertaking.

The salary will be in accordance with Grade X of the Gas Board's Intermediate Grades Agreement (£490/£540 per annum) Conditions 1 of the Agreement will apply. The commencing salary will be in accordance with qualifications and experience.

Applications stating age, qualifications, training and experience, together with the names of two referees should be forwarded within ten days of the publication of this advertisement to the East Midlands Gas Board, 51/55, Lower Parliament Street, Nottingham.

K. L. PEARCE,
Divisional General Manager.

Notts & Derby Division,
Friar Gate,
Derby.

NORTHERN GAS BOARD

MIDDLESBROUGH DIVISION.

APPOINTMENT OF ACCOUNTANCY ASSISTANT.

APPLICATIONS are invited for the above appointment. Salary Grade IX, National Joint Council for Gas Staffs, £570 rising to £670.

Candidates must possess a recognised accountancy qualification, and preference will be given to those having experience in the Gas Industry or in Local Government. A knowledge of mechanical accounting methods will be an advantage.

Forms of application will be provided, which should be returned to the undersigned by August 4, 1951.

JOHN W. PALLISTER,
Divisional General Manager.

Gas Works,
Commercial Street,
Middlesbrough.
July 12, 1951.

NORTHERN GAS BOARD

DARLINGTON DIVISION.

CENTRAL SUB-DIVISION.

JUNIOR ENGINEER.

APPLICATIONS Are invited for the position of JUNIOR ENGINEER at the Darlington Unit of the Northern Gas Board.

Candidates should hold an Institution of Gas Engineers Ordinary Grade Certificate in Gas Engineering (Manufacture) or its equivalent, and should have practical experience in the Chemical Control of Gas Works Plant. The person appointed will be trained for the position of Shift Engineer.

The salary will be in accordance with the National Joint Council for Gas Staffs Agreement, Grade A.P.T. III, Provincial A, Scale £275 to £440 per annum. Initial placing in accordance with age and experience.

Applications, stating age, experience and qualifications with the names of two referees, should be addressed to Charles Hindle Esq., Sub-Divisional Manager, Northern Gas Board, Darlington Division, Gas Offices, John Street, Darlington not later than July 21, 1951.

F. WILSON,
Divisional General Manager.

EASTERN GAS BOARD

IPSWICH DIVISION.

TECHNICAL ASSISTANT.

A TECHNICAL ASSISTANT is required at the Ipswich Works of this Division.

Applicants should be of good education and training and have obtained at least the Higher Grade certificate (Manufacture) of the Institution of Gas Engineers. Experience on large works operating W-D continuous retorts and C.W.G. plant would be an advantage.

Salary will be in accordance with Grade VII of the A.P.T. Scale (Provincial 'A') starting at £500 per annum.

Applications stating age, qualifications and details of training and experience, together with the names of two referees should be sent to the undersigned not later than July 31, 1951.

W. J. COLLINS GARRARD,
General Manager,
Ipswich Division.

Eastern Gas Board,
Crane Hill Lodge,
London Road,
Ipswich.

LABORATORY ASSISTANT required with Matriculation or Inter B.Sc. for semi-technical development work on the gasification of coal. Person studying for engineering or fuel technology degree preferred. Five-day week. Pension Scheme. Apply in writing to the Assistant Secretary, ref. A.26, B.C.U.R.A. Randalls Road, Leatherhead, Surrey.

PROJECT ENGINEER for Gas Works, Tar Works and General Chemical plant. Salary from £700 per annum according to qualifications. Pension Scheme. Permanent Position. Apply to The Chemical Engineering & Wilton's Patent Furnace Co. Ltd., Horsham, Sussex.

DRAUGHTSMEN for contractors manufacturing Gas Works and Coal Tar Products plants. Capable of arranging and detailing vessels and pipework. Five-day week of 38½ hours plus overtime. Permanent position offered at A.E.S.D. London rates. Canteen facilities. Expenses paid for interview. Apply:—Chemical Engineering & Wilton's Patent Furnace Co., Ltd., Horsham, Sussex.

A VACANCY EXISTS in the Laboratories of a firm manufacturing domestic appliances in the London area. Applicants should possess a Science degree or have had experience of domestic refrigeration problems. A permanent post offering prospects of advancement is available for the right person.

Applications which will be treated in the strictest confidence should be sent with full details of qualifications, experience and salary required, to : Messrs. R. & A. Main, Limited, Gothic Works, Angel Road, Edmonton, N.18.

SOUTH WESTERN GAS BOARD

NORTHERN DIVISION.

STATION ENGINEER,

STAPLETON ROAD WORKS, BRISTOL.

APPLICATIONS are invited for the above appointment at a commencing salary of £1,250 per annum.

The Stapleton Road Works is the major Station of the Bristol Sub-Division and at present has a manufacturing capacity of 9 million cu. ft. per day of Continuous Vertical, Horizontal and Producer Gas, which is being extended by the installation of new plant due for completion next year and comprising West's Vertical Carbonising Plant, Coal and Coke Plant, Wet and Dry Purification Plant, Power Plant, Gasholder, etc., to 16 million cu. ft. per day.

A house and garden is available on the Works, rent free.

Applicants should hold high professional qualifications with experience of the control of large Works and be accustomed to the control of Works Staff and labour. Constructional and Power Plant experience, together with a wide knowledge of plant installation and maintenance will be a necessary qualification.

Age preferably between 30 and 45.

The successful applicant will be required to pass satisfactorily a medical examination and shall subscribe to any scheme of superannuation which the Board may introduce in the future.

Applications giving details of training, qualifications and experience, together with the names of two referees should be addressed to the undersigned and delivered not later than Saturday, July 28, 1951.

JAMES CARR, M.B.E.,
General Manager,
Northern Division.

South Western Gas Board,
Radiant House,
Bristol, 1.

(*Classified advertisements continued on Supplement 4*)

APPOINTMENTS VACANT (ctd.)

NORTH WESTERN GAS BOARD

FYLDE GROUP.

APPLICATIONS are invited for the following positions :—

1. CHIEF CHEMIST.
Candidates should have a broad Gas Works experience; Associateship of the Royal Institute of Chemistry or a British University degree will be an advantage.
The successful applicant will be responsible for the work of the chemical staff and must be capable of supervising the chemical control of coal carbonisation, carburetted water gas production plant, purification and by-product plant.
The salary will be within Grade A.P.T. XI of the National Salary Scales (£645-£770 per annum).

2. DEPUTY STATION ENGINEER—MARTON WORKS, BLACKPOOL.
Candidates should possess the Higher Grade Certificate (Manufacture) of the Institution of Gas Engineers. A sound experience in the control of operation and maintenance of Vertical Retorts, Automatic Carburetted Water Gas Plants, together with general modern Gas Works practice, will be an advantage.
The successful applicant would be required to assist the Station Engineer in the general supervision of all activities carried out on the Works including the control of labour.
The salary will be within Grade A.P.T. XI of the National Salary Scales (£645-£770 per annum).

3. DISTRICT DISTRIBUTING ENGINEER.
The successful applicant will be responsible to the Group Distributing Engineer for all aspects of the distributing of gas within the Group Area, including the supervision of new schemes and the maintenance and operation of the existing systems.
Applicants should have had practical experience and should possess the Higher Grade Certificate (Gas Engineering Supply) of the Institution of Gas Engineers.
The salary will be within Grade A.P.T. XI of the National Salary Scales (£645-£770 per annum) according to experience and qualifications.

4. CHIEF ENGINEERING ASSISTANT.
The successful candidate will be responsible for the supervision of all constructional engineering work, civil and mechanical, within the Group, and should be capable of preparing scheme drawings, specifications and estimates. Experience in Gas Works plant operation and maintenance will be an advantage.
The salary will be within Grade A.P.T. X of the National Salary Scales (£620-£720 per annum).

5. CHIEF DRAUGHTSMAN.
Candidates with Gas Works and/or Gas Engineering Contractors Drawing Office experience are preferred.
Applicants should be capable of preparing Scheme and Detail drawings in connection with the development of Works and the maintenance of gas production and ancillary plant, including general engineering, building construction, steel structure, foundations, gas and steam layouts, etc.
The salary will be within Grade A.P.T. X of the National Salary Scales (£620-£720 per annum) in accordance with qualifications.

6. DRAUGHTSMAN (DISTRIBUTING).
Applicants should be experienced in the design and installation of distributing systems and preferably have been trained with a Gas Undertaking.
The salary will be within Grade A.P.T. IV of the National Salary Scales (£275-£460 per annum) according to experience and qualifications.
The successful applicants may be required to pass a medical examination and to subscribe to such scheme of superannuation as the Board may adopt.
Applications, appropriately endorsed, giving personal details, particulars of training, qualifications and experience, together with the names and addresses of two referees, should reach the General Manager, North Western Gas Board (Fylde Group) Gas Offices, Princess Street, Blackpool within fourteen days from the publication of this advertisement.

NORTH WESTERN GAS BOARD

MANCHESTER GROUP.
CARBONISING SUPERINTENDENT—SALFORD WORKS.

APPLICATIONS are invited for the position of CARBONISING SUPERINTENDENT with the Salford Works. The appointment will be subject to the conditions of service as agreed by the National Joint Council for Gas Staffs from time to time, and the commencing salary will be within Grade A.P.T. X of the National Salary Scales (£620-£720 per annum) according to experience and qualifications.

Applicants should possess the Higher Grade Certificate (Gas Engineering—Manufacture) of the Institution of Gas Engineers, or its equivalent, and have had wide experience in the control of all types of carbonising plant.

The successful applicant may be required to pass a medical examination and to subscribe to such scheme of superannuation as the Board may adopt.

Applications, furnishing details of age, qualifications and experience, together with the names and addresses of two persons to whom reference may be made, should be forwarded to the General Manager (Manchester Group), North Western Gas Board, Town Hall, Manchester, 2, so as to be received not later than twelve days after the publication of this advertisement. Envelopes should be endorsed "Carbonising Superintendent—Salford Works."

PLANT FOR SALE & WANTED

CONNELL OF COATBRIDGE

OFFER THE FOLLOWING BOILERS FOR IMMEDIATE DISPOSAL.

ECONOMIC TYPE.
Babcock & Wilcox Marine type, water tube Boiler, 22,000 lb., evaporation. 250 lb., working pressure, Oil fired and complete with burner equipment, oil and water pump, fuel storage tanks, etc. The boiler is self-contained, requires no building in and can be moved or shipped in one piece. Very suitable for land installation. Practically new.
One—Wet back Economic type Boiler, 13ft. 6in. dia., × 10ft. 6in. long × 180 lb., working pressure. Three furnace.
One—Paxman, twin flue economic type Boiler 12ft. 6in. × 7ft. 0in. × 100 lb., working pressure with Meldrum patent firegrate.

VERTICAL
One—Blake, multitubular—17ft. 9in. × 7ft. 6in. × 160 lb., working pressure.
One—Nelvin oil fire, thimble tube—12ft 4in. × 5ft. 3in. × 100 lb., working pressure.
One—Blake, multitubular—10ft. 9in. × 4ft. 6in. × 90 lb., working pressure.
One—Cochran multitubular—10ft. 0in. × 4ft. 6in. × 100 lb., working pressure.
One—Ruston Thermax No. 12, oil fired—9ft. 3in. × 4ft. 1in. × 120 lb., working pressure.
Four—Clarkson Thimble tube, oil fired, type BATO/35, 120 lb., working pressure, 300 lb., evaporation.

LOCO TYPE
One—Wilson semiloco type economic boiler, 3,000 lb., evaporation, 100 lb., working pressure. Year 1937. Complete with Riley Automatic Stoker.
One—12 N.H.P. 100 lb., working pressure by Robey.

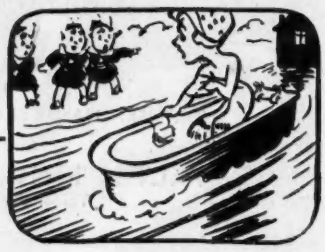
For full particulars apply to:

JAMES N. CONNELL LIMITED
PHOENIX & CLIFTON WORKS, COATBRIDGE, SCOTLAND.

Telephone : Coatbridge 1121 (5 lines).

PLANT FOR SALE & WANTED (Continued)

WANTED : Second Hand GAS PIPES in good condition, eight inches diameter or under, preferably spun pipe, quantity up to 1,500 yards. Details to:—The Malta & Mediterranean Gas Co. Ltd., 5, Great Winchester Street, E.C.2.



THE "FLUXITE QUINS" AT WORK

"I've been swept from the bathroom" cried OO.
"It's a burst! Oh, what shall I do?"
Cried EH. "Hold tight!
We'll fetch the FLUXITE,
And borrow an anchor for you!"

For all SOLDERING work—you need FLUXITE—the paste flux—with which even dirty metals are soldered and "tinned." It does not "poison" the solder nor corrode the metal—and can be used with safety even on sensitive apparatus.
With Fluxite, joints can be "wiped" successfully that are *impossible by any other method.*
FLUXITE has been used for over 40 years in Government Works and by the leading Engineers and Manufacturers. OF ALL IRONMONGERS—in tins—From 1/- upwards.

The FLUXITE GUN puts FLUXITE where you want it by a simple pressure. Price 2s. 6d. or filled 3s. 6d.

ALL MECHANICS WILL HAVE

FLUXITE

IT SIMPLIFIES ALL SOLDERING

Write for Leaflets on CASE HARDENING STEEL and TEMPERING TOOLS with FLUXITE also on "WIPED JOINTS." Price 1d. each.

Fluxite Ltd. (Dept. G.J.), Bermondsey Street, S.E.1

STRINGER BROTHERS
ALBION WEST BROMWICH

S.B
IRON & STEEL
PLATES & SHEETS
BARS & SECTIONS
Telephone:
WEST BROMWICH 0436-7

HOLMES 'WESTERN'

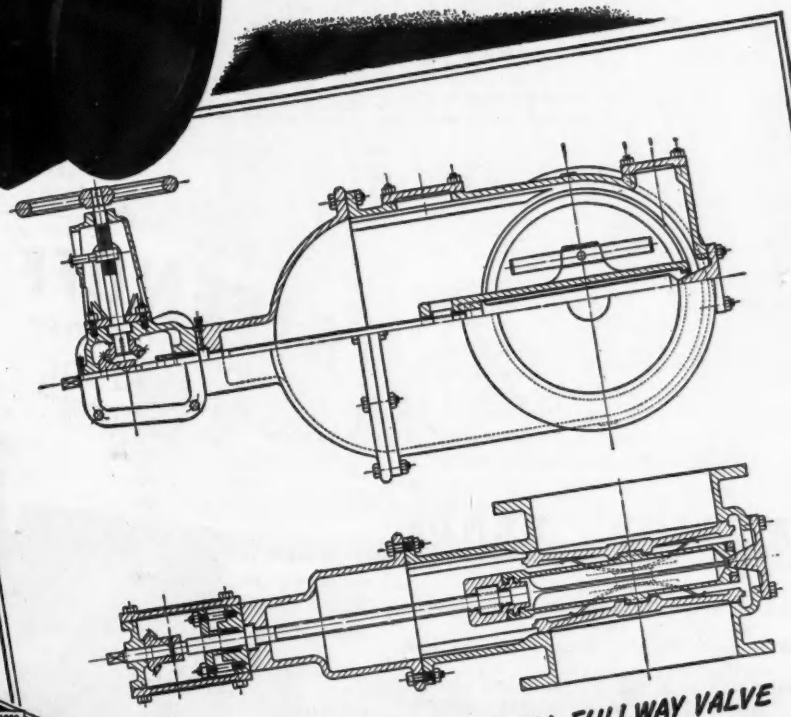
NEW FULLWAY PATTERN

VALVES

(HORIZONTAL and VERTICAL TYPES)

GREATER ACCESSIBILITY . EASIER ASSEMBLY
MORE ROBUST CONSTRUCTION . IMPROVED INDICATOR

The new fullway valve, which can be used in under-pressure work, retains all the distinctive features of the older type of Holmes Western Valve, including easy access, whilst in use, to the interior components and self-cleaning double faces.



HOLMES 'WESTERN' HORIZONTAL FULLWAY VALVE

FOUNDED 1859 HOLMES HUDDERSFIELD

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Work in progress

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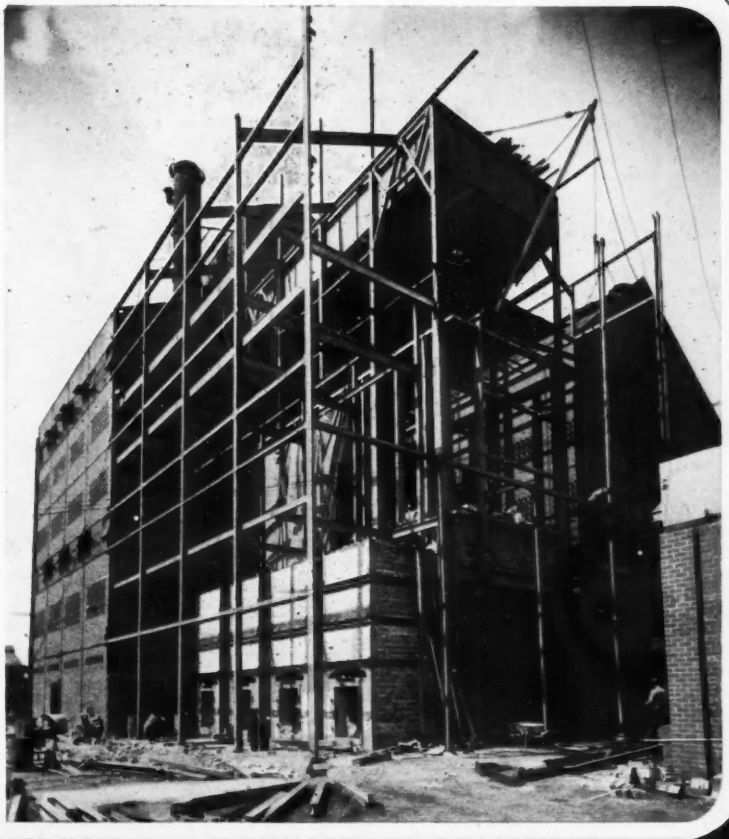
Since the original carbonizing plant at Footscray consisting of 24 retorts was installed in 1926, several additions have been made. The latest extension, shown here, comprises 16 retorts, bringing the total number of retorts to 80.



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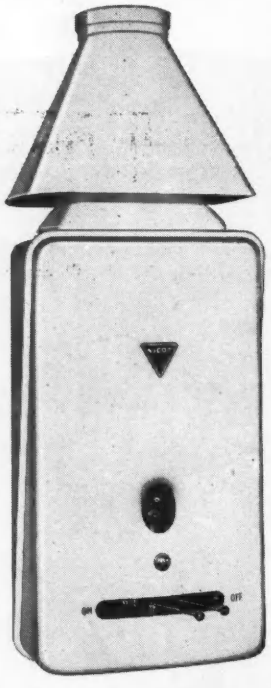

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